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COVER: Two armed soldiers unite to defend their home planet. Art by Barclay Shaw. ABOVE: Don Ivan Punchatz has painted a wide array of science fiction heroes and villains, as the above familiar faces attest. To see more, turn to the Gallery on page 70. (Above image © Lucasfilm)

SCIENCE FICTION AGE

F I C T I O N

34 WITH MCANDREW, OUT OF FOCUS

By Charles Sheffield

In the farthest reaches of deep space, McAndrew, faced with the impossible, considers attempting the unforgivable.

D E P A R T M E N T S

6 EDITORIAL

The end of Babylon 5 leaves me feeling *Blue*.

8 LETTERS

Readers defend Robert A. Heinlein, and novelist Wil McCarthy blooms.

12 BOOKS BY PAUL DI FILIPPO, D. DOUGLAS FRATZ, AND MARK TIEDEMANN

Three outstanding collections highlight the universal appeal of SF's fictional universes.

22 ALTERNATIVE MEDIA

Your guide to the best new SF games, audio, comics, collectibles and more.

26 TELEVISION BY JAMES G. BOUTILIER

Philip K. Dick scores another media hit with the new TV series *Total Recall 2070*.

30 SCIENCE BY JACK COHEN, GEOFFREY A. LANDIS, AND JOAN SLONCZEWSKI

Science Fiction's answers to the future of sex can be found in questions millions of years old.

70 GALLERY BY KAREN HABER

The Science Fiction metamorphosis of dangerous visionary Don Ivan Punchatz.

82 GAMES BY ERIC T. BAKER

With *Shogo's* advanced game engine, the 3-D shooter shoots to new heights.

90 INTERNET BY CORY DOCTOROW

A selection of Net-based Science Fiction diversions.

39 UNEQUAL LAWS

By Stephen Dedman

The killer's crime had occurred back on Earth, millions of miles away. But getting away to a new world didn't mean one could also get away with murder.

54 THE POETRY OF SCIENCE FICTION

By Bruce Boston

Science Fiction can tell you where it's going simply by looking back at where it's been.

56 GREEN ACRES

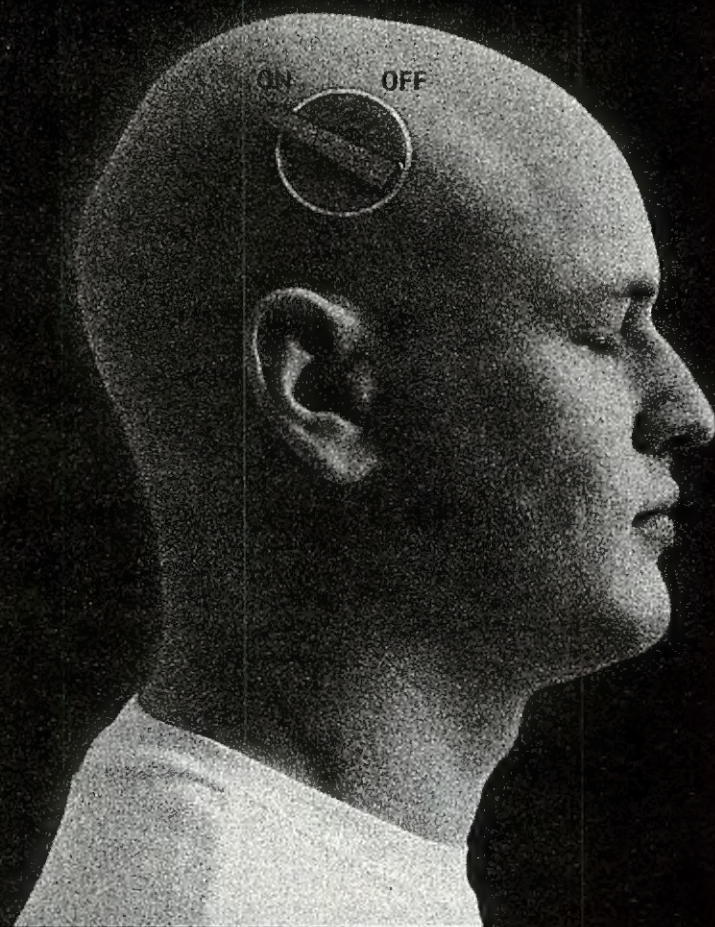
By Allen M. Steele

Turn on, tune in, and drop out—but whatever you do, just don't say no.

66 DEFROSTING THE CAPTAIN

By Daniel H. Jeffers

Traveling through the vast reaches of deep space as they sought a new world, the inhabitants of the generational starship knew but one emotion—hunger!



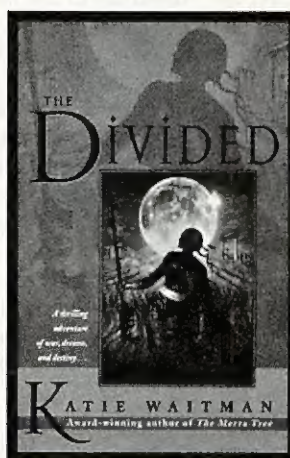
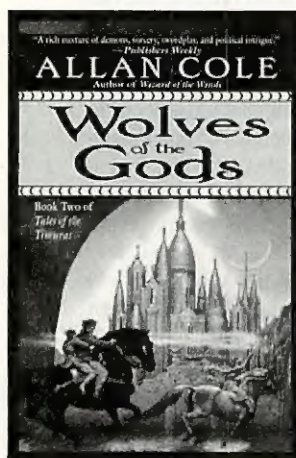
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The end of *Babylon 5* leaves me feeling *Blue*.

TWO OF MY CLOSEST AND DEAREST friends died early last week. In the sort of sad coincidence that Fate seems to keep shoving at us when we're least ready to handle it, they passed on within 24 hours of each other. I was there to see it happen both times, increasing my already deep sense of mourning.

Tuesday night, Bobby Simone, the seemingly indestructible newlywed detective of *NYPD Blue*, died from complications surrounding a heart transplant that followed a mysterious infection. His death was unexpected, uncalled for by the exigencies of the plot, brought about entirely because Jimmy Smits, the actor who had brought the character to life, decided that he'd had his fill of series television.

The following night I witnessed John Sheridan, who saved us all from the Shadows on *Babylon 5*, expire when Lorien's precious gift of an additional 20 years of life force gave out. We, the loyal viewers, had known of this eventuality for years. As the series progressed, we have all felt the clock ticking as surely as did Sheridan himself.

Two deaths, each of a beloved fictional TV character. You'd think my response to these events would be similar—to mourn, remember, and move on—and yet the differences in my reactions gave me pause. While the first of these shows left me feeling somehow cheated, the second had me in a state of exaltation, as if I had been oddly uplifted. Why, I wondered, this sharp contrast between how each death affected me?

Art, said Alfred Hitchcock, being only slightly facetious, is simply life with the dull bits left out. But art is other things as well. Art requires a great motivating force behind the scenes, promising us that what we're watching, reading, listening to, has a purpose. Art, though it may have the illusion of randomness, is not random. Art knows the difference between verisimilitude—or the illusion of life—and life itself. Art delivers what it promises. Or if it does not, even the breaking of that promise is part of some grand design. Art takes us by the hand and leads us where we might not realize we want to go, but once we get there, we understand that our lives could have had no other destination. Art teaches us that life's struggles matter.

When the characters whom I have been made to know intimately are made to die, I want their deaths to occur for one reason only—they must die because their creators demanded it, because that was the only way

that fictional character could convey the thematic message meant to be conveyed. For a character to die as the result of an accident of casting seems hollow.

Witnessing the death of Bobby Simone, I felt sad at first—who would not? But after a time—and not too long a time—I felt manipulated. Simone's death fit no master plan devised by Steven Bochco to let us see the full range of life in a New York City police department. It occurred as bad luck always occurs, as a sneak attack, and its only message was that unfortunately, yes, bad things do happen to good people. Well, we already know that message. It is old by now. We get taught it every day. We have no need to be taught it by our fictions, particularly not when the choice of it was only an illusion.

Steven Bochco surely had plans for Bobby Simone that differed from the end we were eventually given. We won't get to find out what those destinies were, what sort of person Bobby Simone might have been had he survived to a series finale. Over the years, we were made to love him. We were not made to love him for this.

J. Michael Straczynski also caused us to love as we invested our emotions in his five-year saga. He warned us early on about what was to occur to John Sheridan, and we alternately dreaded it and accepted it as each episode of *Babylon 5* passed. Dreaded it the way we dread any ill that must befall our friends. But accepted it the way we accept the necessary sacrifice that shortens a life well lived.

I believe those of us who love fiction of any kind do not mind the dying that must occur in the fantasy worlds in which we've been made to believe. What we mind is when the occasional senselessness of life is transferred whole cloth to the page or the screen. Death, as a part of Life, is a part of Art as well, and must be a part of any creation that intends to make us think and make us feel. But death should not come cheap. It should have a point.

I write these words as a longtime fan of Steven Bochco, as someone for whom *Hill Street Blues* was "appointment TV" back before we started using the term. I know that for most, Jimmy Smits' final episode scored a home run. Perhaps it will even snag him an Emmy. But I'm afraid that I was left feeling manipulated. And I did not like that feeling.

I've had enough friends and relatives die on me in real life. I'm sick of the taste. When creators use death as an ingredient in their recipes, they should remember that.

Scott Edelman

SCIENCE FICTION AGE

VOLUME 7

NUMBER 3

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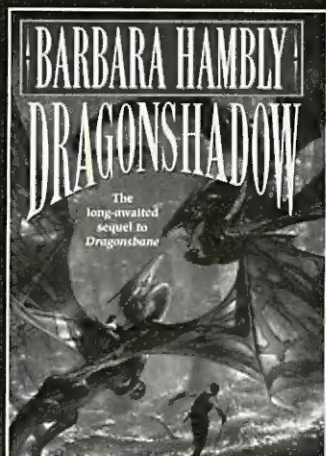
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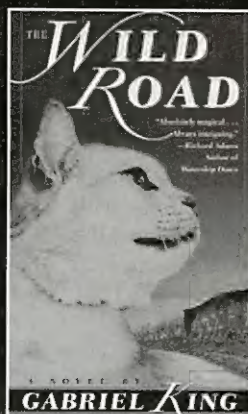
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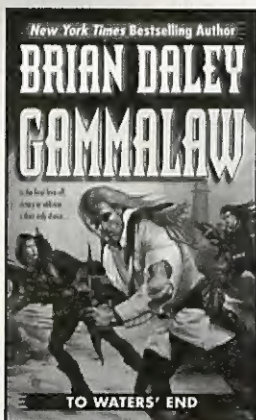
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Dear Mr. Edelman:

Repeat a lie enough times and you'll always find some credulous soul to believe it. Lucius Sorrentino's letter praises Thomas M. Disch: "His castigation, for example, of Robert A. Heinlein as a racist, xenophobe, and ultra-rightwing militarist was both unflinching and perceptive."

Racist: In Heinlein's *The Star Beast*, written in the mid-1950s, a Kenyan named Henry Kiku is in charge of negotiations with extraterrestrials who threaten to destroy the Earth. In *Starship Troopers*, the hero, Juan "Johnny" Rico, is a Filipino who speaks Tagalog at home. In *Farnham's Freehold*, another spin of fortune's wheel brings technologically advanced Black Africans to colonize and exploit Darkest America.

Xenophobe: For most of his career, Heinlein spent more time traveling the globe than writing. True, he did not like some of the laws and customs of other countries. Visiting South Africa in the early 1950s, for example, he excoriated apartheid as "worse than slavery."

Ultra-rightwing militarist: By the mid-1950s, perhaps influenced by his libertarian-minded wife, Heinlein had come to oppose the military draft, saying that any society that needs to draft its defenders doesn't deserve to survive.

Lastly, it's no surprise that Disch's attack on Heinlein is "unflinching." Disch's current career, as a writer for various left and ultra-left publications like *The Nation*, is not likely to suffer for it!

Taras Wolansky

Dear Mr. Edelman:

Congratulations on the January issue. I thought it was one of the best in a while. I especially liked Andrew Weiner's "The Identity Factory," which was both funny and scary. I am very glad you are publishing Weiner on a regular basis. "Rexitos" and "Dark Calvary" were both quite good but in different ways. "Marla and the Eeler" and "The Star Dreamers" proved entertaining.

If the remaining 1999 issues are as strong as this, it will be *SF Age's* strongest year ever.

Michael Samerdyke

Dear Scott:

I didn't know you were going to print my correspondence on your Editorial about Disch. If I'm creative in my cover letters, I can now say I've been published in *SF Age*.

Those were great quotes about *Babylon 5* in the January issue. Glad to see so many

writers appreciated what an accomplishment this series was. I loved the quotes by Joe Straczynski: "I'm happy to have done a show that points to the literary roots of science fiction, that has led viewers who might not otherwise have done so to go to their bookstore and buy a book by Alfred Bester, or go to their first SF convention. *Star Trek* brought a whole new audience into the science fiction community, and now *Babylon 5* has done the same, which cannot be a bad thing."

That's the *right* attitude! I wish more in our SF community realized that fact: The life of a nation is its population. This quote by Joe was also great, one I will long remember: "But I didn't know it was impossible at the time, so I just sort of went ahead and did it."

Now that's an entrepreneur!

Dustan Moon

Dear Scott:

Regarding the *Bloom* review by D. Douglas Fratz in your November issue, I come away with the sense that Hard SF reviews really ought to include a technical appendix. For example, the "limit of diffraction" equations

$$\Theta = (1.22)(\lambda / D)$$

$$r = (2)(R)(\tan(\Theta/2))$$

at optical wavelengths and a plausible Venus-Floral Asteroids range of 220 million kilometers, show the resolving power of a 2 km telescope mirror, even without deformable optics and advanced image processing, to be right around one meter, a prospect the review dismisses as "ridiculous" without providing any supporting evidence. In this and other matters, Mr. Fratz is invited to recheck—and show—his arithmetic.

Wil McCarthy

Dear Scott:

Your response to Bob Schreib, Jr. missed the point of his letter. He wasn't shocked with a purported view that Mike Resnick favored female circumcision, but with the extreme unreality of any girl/woman desiring to be circumcised. Thus, he was criticizing the credibility of Resnick's character, which I entirely agree with.

Similarly, I found Stephen Dedman's portrayal of Lee Harvey Oswald in his later years, had he not assassinated President Kennedy and had he lived on, as a kind of stolid, earnest individual completely misplaced. Having lived through the events of Dallas and witnessed Oswald's murder on live television, and followed his history, I must conclude that Oswald was an angry man, typically confused by what was happening to him in his life, and

utterly failing. It is far, far likelier that he would have ended up a spouse abuser and alcoholic, and possibly a petty criminal, than Dedman's solid citizen.

One of the frequent shortcomings of Science Fiction is that human personality is poorly portrayed, to say nothing of failing to create convincing aliens.

Allen Meyer

Dear Mr. Edelman:

Frank Horbelt in his letter quoted the saying, "75% of Science Fiction is garbage, but then 75% of everything is garbage." This is Sturgeon's Law, named after Theodore Sturgeon. Except Sturgeon had it "90%", and the word he used in print was "crud." I guess that it is a coincidence that in the same issue Michael Swanwick made a pun on Sturgeon's nifty story "Microcosmic God" (collected in *The Science Fiction Hall of Fame, Volume I*) with his rather nice story "Microcosmic Dog."

Michael S. Hopkins

Dear Mr. Edelman:

Would you please tell "The Crash Dummy" (nee Paul Di Filippo) that "Mark Twain" (nee Samuel Clemens) was a Missourian, not a Mississippian. I'll just bet some "Show Me Folks" (nee Missourians) will be upset by this "boo boo" (nee SNAFU).

It's hard to believe I've been with *Science Fiction Age* since its premier issue. Seven years of good, solid enjoyment (and kudos to you, too). I plan to be with you much, much longer. I do have one (minor) complaint: I get glare from the nice, slick pages. As I read, I constantly have to shift the magazine around, so I can see the words. If there are any other readers with the same problem, tell Scott about it. I'll bet there is a cheap fix for it. Something like pages 43-58, perhaps?

Pete Blackwell

Dear Mr. Edelman:

Is your profit margin so small that you still can't afford to use better quality paper for the novellas you publish in each issue?

Reid Babbitt

As the two letters above show, you can't please all of the readers all of the time, as many wish we'd improve the magazine in completely contradictory ways.

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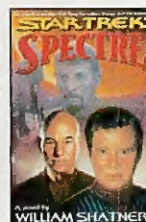
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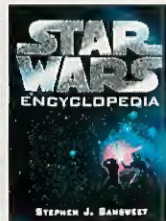
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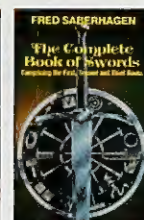
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BOOKS

By Paul Di Filippo, D. Douglas Fratz, and Mark Tiedemann

Three outstanding collections highlight the universal appeal of SF's fictional universes.



ABOVE: Stephen Baxter's latest collection contains a plethora of new universes. Art by Bob Eggleton.

NO ONE HAS EVER ACCUSED STEPHEN BAXTER of thinking small. Over the course of four novels—*Raft* (1991), *Timelike Infinity* (1992), *Flux* (1993) and *Ring*

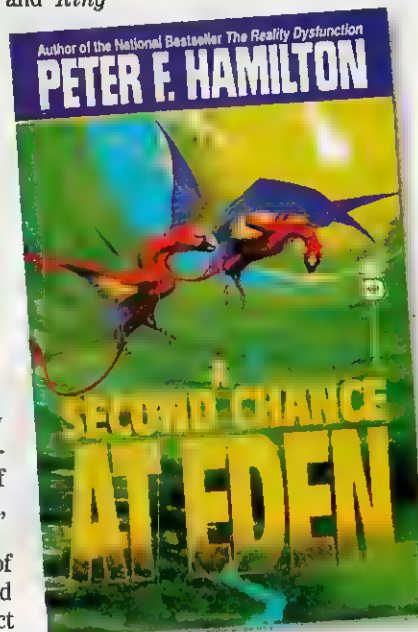
(1994)—Baxter has sketched out a future history stretching from the birth of our universe to its destruction, a span of some 20 billion years. Called the "Xeelee Sequence," Baxter's time line is highly recompiled, involving many sentient species besides humanity, time-travel alterations, and venues far outside our home galaxy. The key milestones of his chronology, the full schema of the relationships among the players, have not been completely self-evident from the novels alone. Now this defect is remedied in spectacular fashion with the publication of *Vacuum Diagrams* (HarperPrism, trade, \$15.00, 373 pages).

Vacuum Diagrams collects all of Baxter's short stories published between 1987 and 1996 that connect to the Xeelee Sequence. They have been revised and mortared into sequential place with new

finds similar creatures on Pluto. "Cilia-of-Gold" visits Mercury's buried life. "Lieserl" follows the forced transformation of a human into a being fit to flit through the Sun.

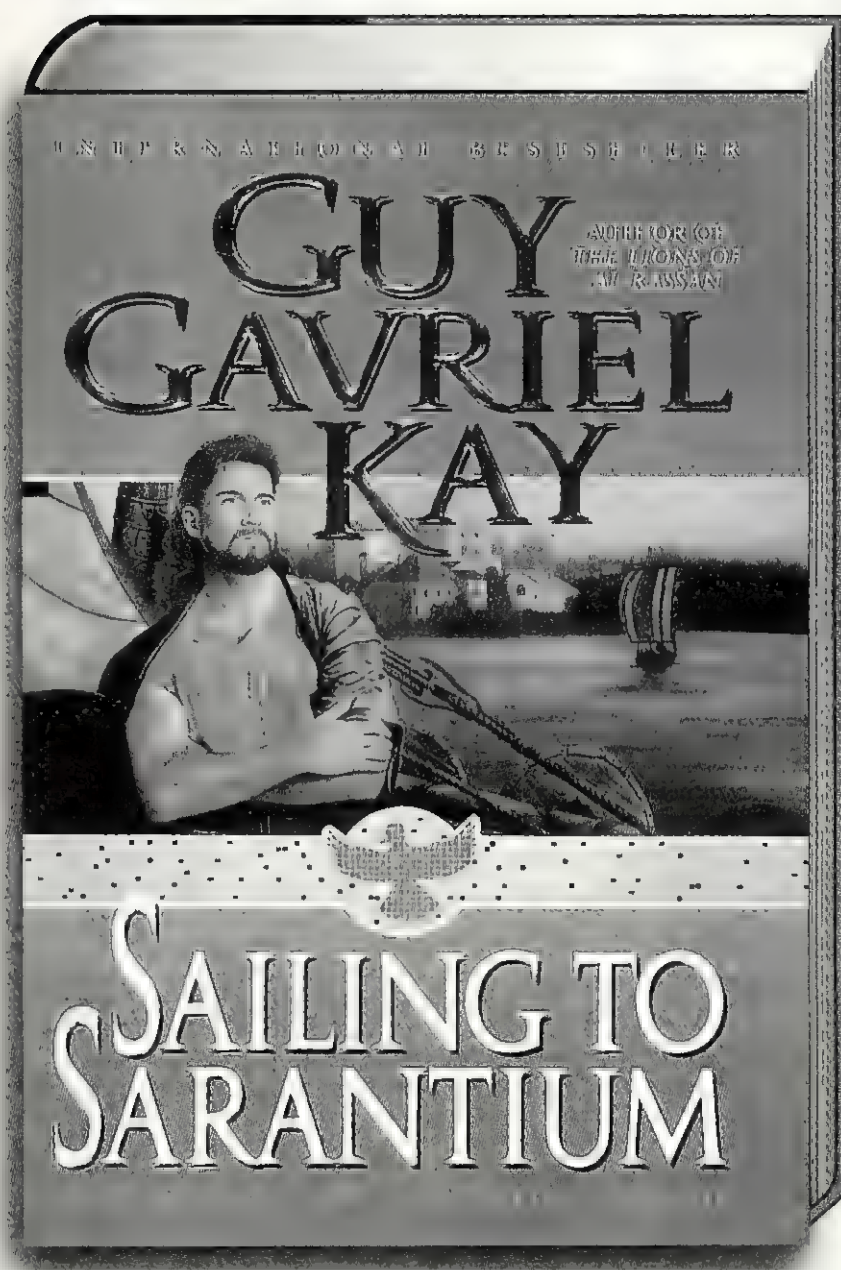
While these stories reflect the influence of Blish, others plainly owe an unhidden debt to early Larry Niven. A story such as "Blue Shift," detailing the wily way a human pilot outwits his alien employers, exactly recapitulates Niven's "Neutron Star." In fact, Niven's pioneering construction of his own future history through a mix of short stories and novels offered Baxter his ultimate fictional model. Alternately, a few of the simpler stories—"More Than Time or Distance" and "The Switch"—hark back to Hal Clement and his piercingly logical problem-solving puzzles. A final homage—to Theodore Sturgeon's "Microcosmic God"—can be discerned in "The Logic Pool." But citation of all these worthy inspirations barely begins to convey Baxter's true worth and effect, born of his distinctive intelligence and perspec-

tive. Mention should be made of his style and of his scale-hopping narrative drive. Direct, precise, sparse, his



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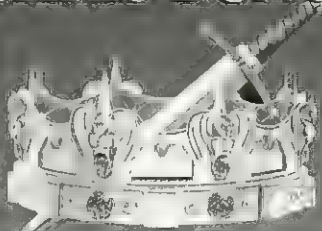
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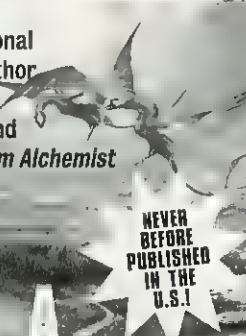


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language, while capturing the physicality of cosmic reality with eye-opening crispness, nonetheless harbors poetry as well.

As for Baxter's storytelling thrust, he compresses more into a single tale than many writers stretch out over novels. Sometimes this has a distorting effect, as characters continuously arrive fortuitously at various locales just as situations are ready to explode. But generally, Baxter maintains tight control of his impulse to pack a lot of action and conceptual hijinks into any one story, focusing tightly enough to give coherence to each tale.

Additionally, attention should be paid to Baxter's own philosophical values, which are an integral part of this book. He privileges human ingenuity and confidence over conformity and despair, but not to the extent of sounding glib or naive. In fact, Baxter possesses what Brian Aldiss has called "a sense of the tragic," a particularly British trait lacking in someone like Niven. Baxter's vision of a universe where dark-matter life forms seek to exterminate our kind of life (baryonic), as well as his insistence that life always walks a thin tightrope in any environment, lend to his vision a sweet melancholy. In "The Baryonic Lords," the way in which humanity's ultimate sad decline parallels its hopeful origins—a handful of humans, the last of the race, find themselves playing Adam and Eve on an artificial worldlet alone in a parallel universe—is simultaneously uplifting and sobering.

The new connective material—developed from the story "The Soliton Star"—functions well, presenting the various stories as a virtual lecture experienced by one Jack Raoul, a character who first appeared in "Planck Zero." Jack's own tale is emotionally affecting, and concludes effectively in an epilogue.

With Stapledonian panache, Baxter gives us in *Vacuum Diagrams* adventures and intellectual conceits aplenty, adding up to a cosmogonic myth of no small potency.

Paul Di Filippo

A Second Chance at Eden, by Peter F. Hamilton. Warner Aspect, paperback, \$6.50, 432 pages

Each decade the SF field has seen a dozen or more new writers emerge who are prolific, imaginative, original voices, destined to play a strong role in continuing the evolution of SF in decades to come. The 1990s seem atypical thus far. Beyond Greg Egan, and possibly a few others such as Stephen Baxter (where are the notable new American writers?), this decade has been dominated by authors who burst onto the scene prior to 1990.

As the decade closes, a new name appears to be vying to make the list of emergent SF writers of note: Peter F. Hamilton.

Hamilton first made his appearance with a series of three well-written SF murder mysteries in his Greg Mandel series, *Mindstar Rising* (1993), *A Quantum Murder* (1994), and *The Nano Flower* (1995). He immediately followed with what promises to be one of the most innovative far-future SF sagas to date,



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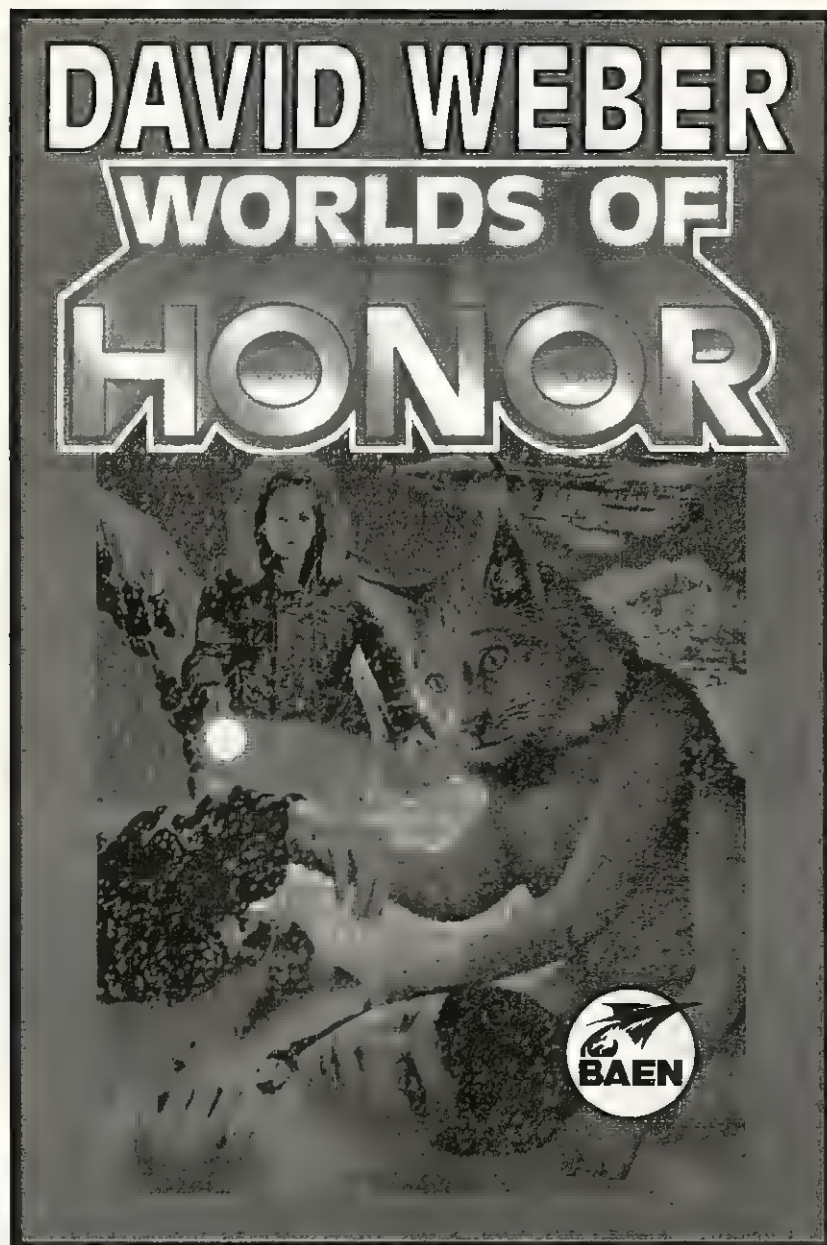
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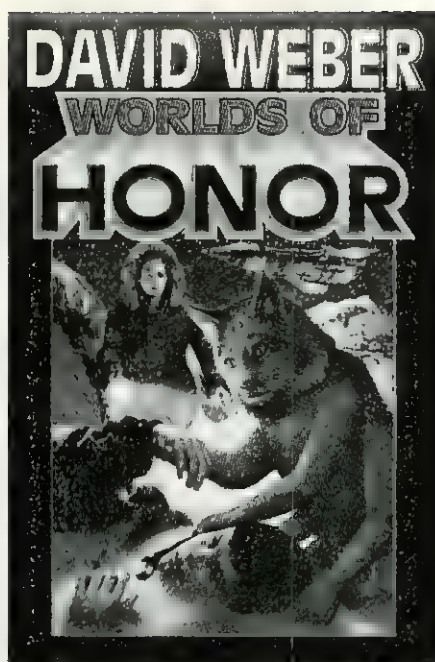
David Weber is science fiction's brightest, hottest star and the core of his work is Honor Harrington, the toughest, smartest starship captain in the galaxy. Now Weber, with a select group of guests, invites you to explore Honor's universe. Weber himself is on board with two new stories, beginning with an account of how young Honor Harrington first demonstrated the stuff of heroes when she had to rescue victims of an avalanche. Also on hand with their own excursions into Honor's world are Roland Green, Linda Evans, and Jane Lindskold. Hardcover SF ♦ 0-671-57786-7 ♦ 352 Pgs ♦ \$21.00

his Night's Dawn Trilogy, starting with the massive novels *The Reality Dysfunction* (1996) and *The Neutronian Alchemist* (1997), and to be completed next year with *The Naked God*. The trilogy is set in a complex, varied, and vividly realized, biotechnological human future history among the stars.

Hamilton's first short fiction collection, *A Second Chance at Eden*, contains seven stories set in the same future as his Night's Dawn Trilogy, all occurring at various times in the 500 years prior to the start of the trilogy. The stories are arranged in chronological order as they occur in Hamilton's future history, and the collection can be read as a prelude to the Night's Dawn Trilogy.

The first story, "Soonie's Edge," takes place on Earth in 2070, and has some overtones of cyberpunk. The story involves an early use of biotechnology (called "bitek") to create grotesque mind-controlled (called "affinity-linked") monsters who fight in death matches in small, illegal clubs—high-tech cock fighting. The short story has a bloody surprise ending where we learn how the tough young woman who controls the winning "beastie" actually gets her "edge".

The title story, a long novella that may be the best in the volume, tells the origins of the Edenists, who are destined to become a new branch of humanity. Eden is a massive, biotech space colony in Jupiter orbit whose citizens are affinity-linked not only to each other, but also to the mind of the living



colony. The story is a murder mystery that must be solved by the colony's new chief of police. The story is filled with wonderful characters, including the sympathetic new police chief, his blindly religious wife, their teenage children who long for acceptance by their peers, the ancient inscrutable Oriental genius who invented affinity and helped design Eden, his beautiful and strangely dedicated young disciple, and many more. Original con-

cepts abound, as the protagonist learns about Eden, solves the murder mystery, and watches as Eden evolves to provide for a sort of immortality for its citizens. The upcoming split in humanity between the Edenists and Adamists (who remain unaltered) is mildly reminiscent of Bruce Sterling's early Shapers/Mechanists stories. "A Second Chance at Eden" should prove to be one of the best novellas of the year.

"New Days Old Times" is the touching tale set on an agricultural colony planet that is serving as the dumping ground for poor Earth immigrants, who bring their racism and bigotry with them. The sympathetic protagonist is a strong, kind, young widow who is trying to preserve her farm for her children. With a few changes, the story could have been set in the late 19th-century American West. "Candy Buds" is set on Tropicana, a biotech commerce enclave and oceanic tourist paradise planet that is controlled by rich and ruthless crime lords. The story tells how one crime lord discovers both his daughter to groom as heir and the biotech development that makes him top boss, a bioengineered organic factory that can grow buds that when ingested impart vivid memories created by a small boy who was affinity-linked to it by his genius father.

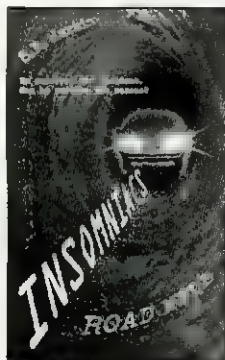
"Deathday" is a short story that is both melancholy and frightening, as a man seeks to avenge the death of his young wife by hunting down and killing a telepathic alien life form that somehow survived when the planet

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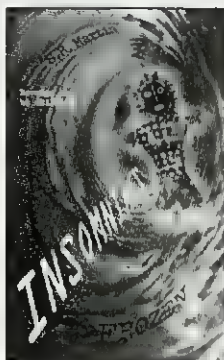
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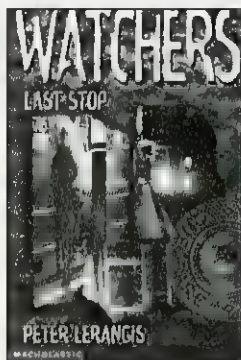
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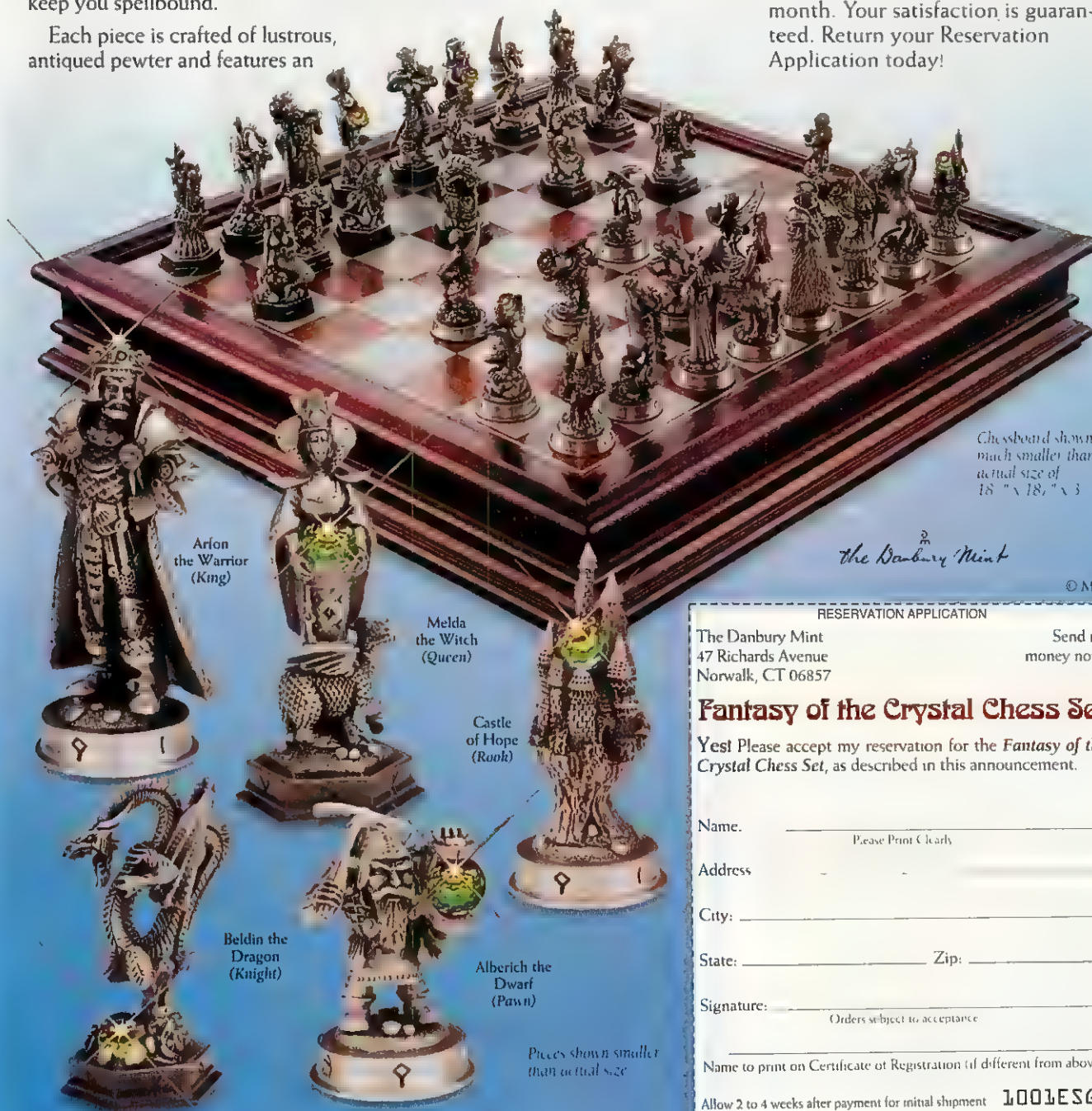
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was horribly sterilized of alien life in a failed attempt to establish a human agricultural colony. "The Lives and Loves of Tiarella Rosa," set on Tropicana nearly a century later than "Candy Buds," is another marvelously complex novella about a fugitive revolutionary who steals a dangerous weapon from his compatriots and finds a hiding place with a strong-willed woman and her beautiful teenage daughter on their decaying island plantation. The story takes several unexpected turns as the man, a stone-cold killer, falls in love with the daughter, and learns her mother's bizarre secrets.

The final story, "Escape Route," involves a ship and its crew hired by a group ostensibly to use a new technology to prospect for gold-rich rocks in a "disk system," a star system with rings of broken planetoids instead of planets. Instead they discover a large intact section of an ancient alien shipwreck filled with advanced technology, and end up having to fight the group that hired them, who turn out to be terrorists seeking fuel for nuclear weaponry.

A Second Chance at Eden is a superior collection of well-crafted, imaginative Science Fiction stories. It provides significant evidence that Hamilton should have a brilliant Science Fiction future as one of the best new authors to appear in recent years.

D. Douglas Fratz

***Worlds of Honor*, by David Weber. Baen Books, 352 pages, hardcover, \$21.00.**

SF, like mystery and detective fiction, is enamored of The Series. Continuing characters and, marginally less frequently, common backgrounds, form a substrate of foundational material extending back to the earliest days of blazing rayguns and vestigially aerodynamic spaceships. There is an appealing comfort in old friends and familiar surroundings, even if the whole point of SF is the examination of and experimentation with The New. One of the outgrowths of such playgrounds is the homage. Stories written by others within the worlds of the principle author. Though many independent novels have been written as homage, the most common example is the short story collection. Brief excursions by admirers into certain perhaps unexplored corners of a given universe.

Worlds of Honor is such a collection. The five novellas are set within David Weber's "Honor Harrington" universe. They represent a wide range of sensibilities, from the eco-awareness theme of the first story, by Linda Evans, to a well-wrought tale of court intrigue by Jane Lindskold, to a military SF tale by Roland Green. Between these, David Weber has contributed two of his own stories, one featuring Honor Harrington herself, although her family is prominently mentioned as significant to the history of human-Treecat relations throughout. The time frame spans centuries and follows the history of the relationship between humans of the Star Kingdom and the native Treecats of Sphinx, a telepathic race,

certain members of which "bond" with certain humans whose mindglow calls to them.

The Star Kingdom is an aristocracy, a constitutional monarchy, which is another conceit Science Fiction seems bonded to, despite certain fundamental unsuitabilities in an interstellar milieu. Weber's take on it seems much more in line with what has become of Great Britain's aristocracy and therefore avoids many of the pitfalls of an unexamined paean to the imagined romance of such institutions a great deal of less memorable SF indulges.

The Treecats, however, make this a unique place to explore. Six-limbed, powerfully empathic with their humans, telepathic among themselves, with customs and a history of their own, the bonded Treecats are like emissaries to another land. The bond is emotional and lifelong and powerful and, in the first part of the book, innately tragic because of the wide difference in life-spans. The Treecats live more than twice as long as humans. By the middle period, life-prolongation treatments are allowing humans to catch

up and surpass Treecat life-spans.

Beyond the historic timeline aspect there is no common theme other than the relation of people to the Treecats under widely differing circumstances. These are tales that shine a light into a previously unexamined room in what is a growing house. The book supports itself nicely—it works well without reference to the rest of the Honor Harrington canon—but would make a solid addition to the series as a whole.

In a way, the Series is very much like a town or a city, planned and laid out by a single mind, hand-built over time, and in the course of the building the creator stops in a house or a shop or a factory to see what may be going on. Sometimes it's pleasant to see what places others might choose to stop at for a look, and *Worlds of Honor* is that kind of book. Books like these remind us that worlds of the imagination are, in many ways, real places to go to, and that sometimes half the wonder is in contemplating what else might be found there that we didn't see the first time through.

Mark Tiedemann

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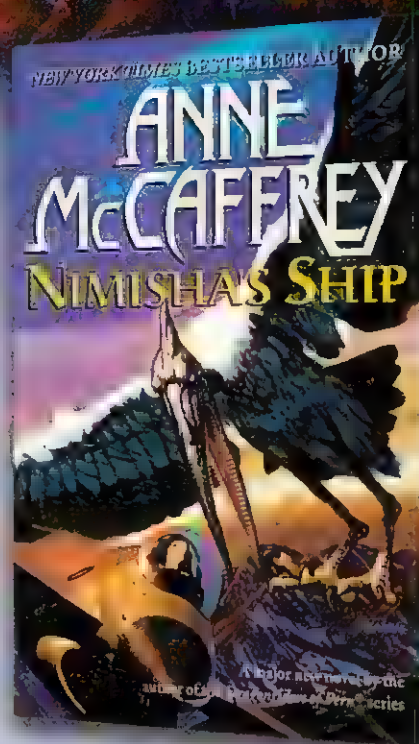


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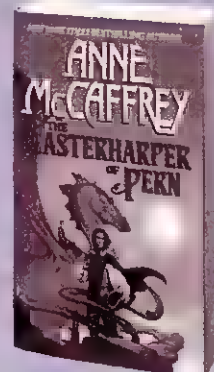


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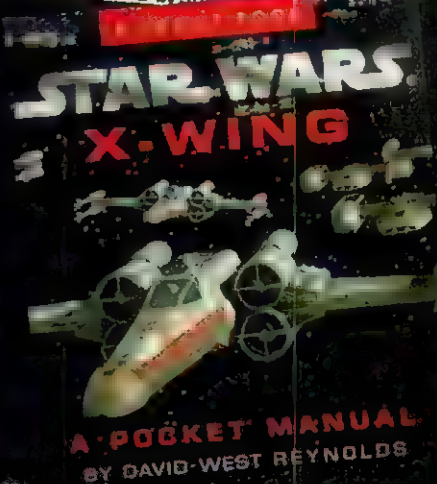
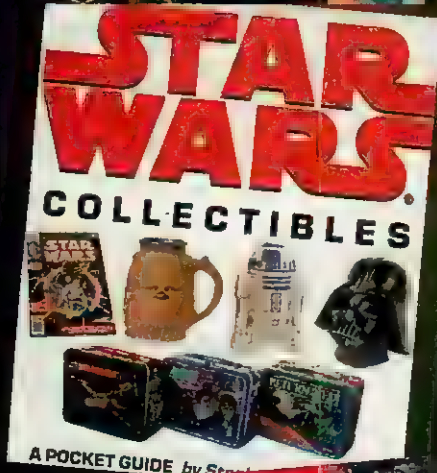
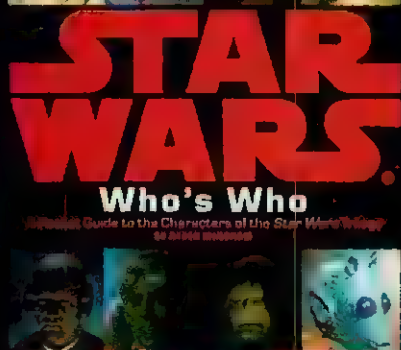
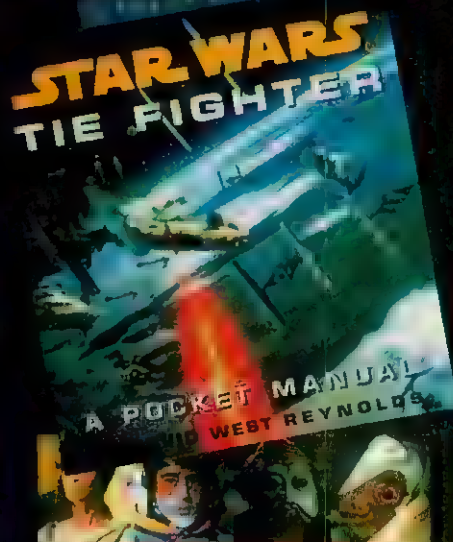
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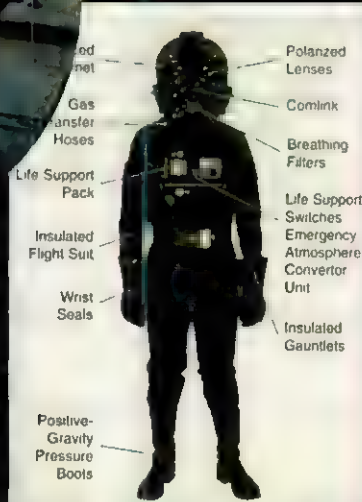


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Since the last moments of *Return of the Jedi* when we watched as the trinity of Anakin Skywalker, Obi Wan Kenobi, and Yoda appeared as shimmering apparitions to the young Jedi, Luke Skywalker, we have hungered for another *Star Wars*. With the latest installment in the Lucas universe nearly upon us, it can't hurt to brush up on both the films and the merchandising—though no one could actually forget *Star Wars*! Running Press has just published four of the greatest—albeit smallest—*Star Wars* pocket trivia books with which to do this. Measuring a mere 2 3/4" by 3 1/4", each hardback pocket guide or manual is only \$5.95 and can fit in the palm of your hand, if you pause to put down that lightsaber. Who was Dr. Evazan? *Star Wars Who's Who* by Ryder Windham will tell you—remember the ugly mug in the Mos Eisley cantina who says that he doesn't like the look of Luke and that he's wanted in 12 systems? Meet the good doctor. And it was Dr. Evazan's buddy, Pondo Baba, who lost his arm at the hands of Obi Wan's lightsaber. Once you flip through *Star Wars: X-Wing* and *TIE Fighter* by David Reynolds, you will know everything there is to know about these ships. Complete with pop-up pages showing dogfights and views from the cockpit, these books are perfect for the *Star Wars* fan who has it all. Speaking of which, the last in the quartet of Pocket Guides is written by Stephen J. Sansweet, *Star Wars* fan supreme, owner of more than 25,000 *Star Wars* related collectibles. It is aptly titled *Star Wars Collectibles* and shows many of the more intriguing toys and collectibles made available since *Star Wars* premiered in 1977, from R2-D2/C3PO belt buckles to Coca-Cola bottle caps to boxer shorts to candy. Apparently Kellogg's had a breakfast cereal called C3PO's and Pepperidge Farm had both Rebel Alliance and Imperial Forces cookies. Tasty! Check your local book stores for these tiny treasures. Yoda would be pleased.



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COLLECTIBLES

MOORE MST3K



LIGHTS! POPCORN! WISE-CRACKS! *Mystery Science Theater 3000* is approaching its tenth anniversary of scraping the bottom of the sci-fi barrel, making mincemeat of

the most monstrous of B-movies. To help celebrate that event, the stars of the show that is to bad science fiction as *The McLaughlin Group* is to bad politics are about to be treated as are all pop culture legends of the silver screen these days. In keeping with their roles as icons of humanity, the Siskel and Ebert of sci-fi have had their likenesses made high quality sculptures. The caustic Crow T. Robot and tasteless Tom Servo are the latest releases from the Texas-based Moore Action Collectibles. Priced at \$99, these limited edition, finely crafted cold-cast porcelain renditions of Crow and Servo are the perfect adjuncts to your *MST3K* television watching. Set them in your living room with your TV set tuned to The Sci-Fi Channel and watch along with the *MST3K* crew as you are forced to watch the worst genre movies ever unleashed upon an unwitting public. With a robot at each elbow, you could almost be Mike Nelson himself, the experimental subject of the diabolical Dr. Forrester. Look at it this way—if you're going to watch bad films, you might as well have some friends around.

MARVELOUS MOVIES

Marvel Comics classics, animated insects, and an alien invasion make their way to video stores this month:

ANTZ: The first of the insect armada flicks to hit the streets was an animated success for Dreamworks SKG. In a film so faithful to Woody Allen's usual *oeuvre* that it could have been titled *Deconstructing Antz*, Woody Allen stars as the worker ant Z, whom we first see lying on a psychiatrist's pod complaining that he feels insignificant. Listening to his constant kvetching are the likes of Sharon Stone, Sylvester Stallone, and Jennifer Lopez. Representing the dark side are Gene Hackman, who provides the voice of the Patton-like leader of the warrior ants, and his conflicted aide Christopher Walken.

DISTURBING BEHAVIOR: We know what you'll do this winter—go hunting for another teens-in-trouble pic so you can scream and your friends can scream too. This eerie tale of Stepford kids comes to you courtesy of a team of *X-Files* alumni, headed by the score from Mark Snow and direction by David Nutter. The dream teen team is led by *Dawson's Creek*'s Katie Holmes, James Marsden of *Second Noah* and Nick Stahl of *The Man Without a Face*.

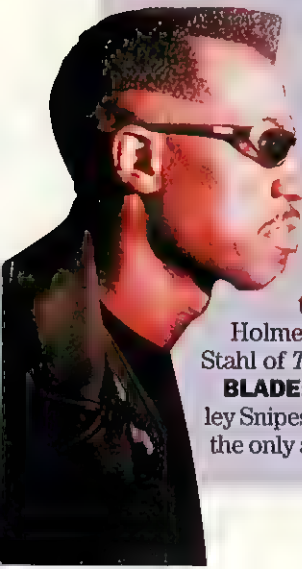
BLADE: Marvel Comics' first coup was casting Wesley Snipes as Blade, the Vampire Killer, who was likely the only actor capable of carrying off the undead role.

NEW ON VIDEO

With art by Gene Colan, the Marv Wolfman-created character first appeared in the comic book *Tomb of Dracula* in the mid-'70s. This unlikely hero was a sleeper hit, and performed well enough that sequels are being discussed. The fine supporting cast of Kris Kristofferson (*Lone Star*), Traci Lords (*Virtuosity*), and Stephen Dorff (*I Shot Andy Warhol*) help bring the mayhem alive.

MARVEL MANIA: A staple of the comic book fan of the '60s, these animated adventures of *Spider-Man*, *Captain America*, *The Hulk*, *Iron Man*, *Thor* and *The Sub-Mariner* accurately captured the thrill of the early days Marvel Comics. Each hero has two episodes per tape, along with exclusive interviews with creator Stan Lee. Also available in special collector packs which include three videos, a reproduction of a Silver Age Marvel Comic, a collectible silver medallion and an original limited edition lithograph.

INVASION EARTH: The BBC and The Sci-Fi Channel co-produced this mini-series of alien invasion. Fred Ward (*The Right Stuff*) and Maggie O'Neill (*Gorillas in the Mist*) star in this tale of Earth's struggle to avoid getting caught up in an interstellar war. Special FX Supervisor Dennis Lowe previously worked on *Alien*, *Aliens* and *The Empire Strikes Back*. The 3 tape set runs 270 minutes.





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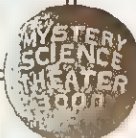
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TELEVISION

By James G. Boutillier

Philip K. Dick scores another media hit with the new TV series *Total Recall 2070*.



ABOVE: Detective David Hume (Michael Easton) stands in front of the Citizens Protection Bureau Headquarters in the Philip K. Dick-inspired *Total Recall 2070*.

IF YOU THOUGHT IT WASN'T POSSIBLE TO SEE SOMETHING truly new and entrancing from Science Fiction television communications then the crew at Alliance Atlantis might say you were implanted with that misconception—that is, if they were explaining it from a *Total Recall: 2070* perspective. That's right, the movie that made a splash at the box office is back in a darker, more enigmatic television format, thanks to the imagination of series creator Art Monterastelli and some clever interweaving of two popular Philip Dick-inspired movies—*Total Recall* and *Blade Runner*.

This television foray into Next Millennial What-If sleuthing and interstellar espionage and economic domination successfully blends the dark atmosphere of a traditional *noir* film with the action of *Blade Runner* and the technological intelligence of *Total Recall* all wrapped around an enigmatic environment. And if Supervising producer Jeff King, leading man actor Michael Easton, and series regular Cynthia Preston are any indication, intelligence, enthusiasm, and enigmaticism have found an ample ambassador in *Total Recall 2070*.

"The original movie was based on a story Philip Dick wrote called 'We Can Remember It For You Wholesale,' and *Do Androids Dream Of Electric Sheep?* was the basis for *Blade Runner*," Mr. King explains. "The series is inspired by three things: (1) the Rekall technology, its ability to make something that's not real so real that you

can't tell whether it is or not; (2) the kinds of things Philip Dick was writing about. His Science Fiction, if I may be so bold as to categorize it, isn't large planetary society scopes that, say Asimov, or Pohl write; he writes small, intimate, personal stories, about heroes and antiheroes and the human condition in a really great way. And he embraces paranoia. So the brooding interior nature of his fiction is definitely an aspect of the series. We've combined the two, and (3) is all translated through Art Monterastelli's own unique vision of the future, which is really where our series departs strongly from either of those two things.

"This is a different kind of show. Our heroes work at the Citizen's Protection Bureau, which is the police of the future. Our world is very *noir*, retro, a collision of archaic and futuristic things all collapsed into one naturalistic reality. People tuning in are going to get a different experience.... We are set only 70 years in the future, and ... we live in a city that is 250 stories high, very dense, but is built on the shell, the superstructure, of an older place.... They will recognize some of the ideas and technologies from *Total Recall*, but they will also find a Red Mars, a pre-

transformation Mars. We go to Mars in the series, and you'll be happy to know that the Moon has also been colonized, but it doesn't get the same kind of traffic that Mars does. And of course people who have seen the feature will remember that Mars was transformed. So in some ways our series almost predates the feature film."

As for the main character, Detective David Hume? "In a way Hume's career as a police officer still reaches back to the detective tradition of the 20th century, but he's a citizen of the 21st. It's a detective *noir*, a Sci-Fi *noir* ... I have to say I'm delighted that we have what I would call a thinking-man's action hero, because Michael Easton brings to the character a strong intelligence and a brooding heroic quality that frankly I'm convinced makes the series a lot more interesting. Matching him to a really interesting supporting cast with Cyndi Preston is wonderful and brings an interesting and romantic, yet edgy quality, to Hume's wife, Olivia. And Karol Pruner playing his android partner Farve is an exciting match-up."

And yes, he did say android partner. "In our universe we have a ubiquitous, standard android, which is a Beta android, that's a mechanical thing that looks human but isn't human in the way we are. Farve, Hume's partner, is a prototype, a very different android. He's an Alpha 1 and he's been designed to pass and appear to be human. And in the great tradition of a machine intelligence, part of his journey and quest is to become human—that's a valuable

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LEFT: Android Ian Favre (Karl Pruner) assists human officer David Hume (Michael Easton). **BELOW:** Hume pays a visit to the CPB morgue to examine a dead android.

a crack at the script.'

"I had four other scripts that day and I left it to the very end of the night and I sat there and read the whole thing. Art Monterastelli wrote a really fantastic script... [and he] had a really

good idea. So I signed on. It's been a good experience to be a part of."

Although not an SF fan, a little-known fact piqued this actor's interest—and pulled out a closet affinity for SF. "I'm a fan of Philip Dick's writings, and people don't realize that he's the same guy who wrote the short story that became *Total Recall*, and the story that became *Blade Runner*. A lot of the elements are the same and you see that on our sets; when you see our show there are a lot of underlying elements to it."

So just who is Detective Hume? "David Hume is a complex guy. I hope he's a character people can identify and walk through this journey with. He's flawed and is the guy who's trying to hold on to maybe a past way of life that's being overrun in this machine and technology age: There's a lot of strange things happening on the show—sometimes it's surreal and sometimes it's just perverse. People appear one way and are actually another, or are not who they are, there's cloning and brain implants and chips. And this is the one guy that doesn't take things at face value but looks beyond it, maybe with a little cynicism.

"He's got a wife, Olivia Hume, and she's actually protechnology. There are two main companies, ReKall and Uber Braun... one builds the android bodies and the other sort of the memories. She works for them, even though her dad was a cop and had been killed by an android, she embraced the positive elements of it. And [so] his relationship to her is precarious..."

"And the other character I relate with the most is my partner Farve. The last guy on Earth that should have been partnered with an android, got partnered with an android.... The bottom line is, you don't know who pro-

thing not only from the android's perspective, but from a human being's perspective. It certainly brings us back to the fascination that Philip Dick has with the effect of technologies and their application on people and how we live. I'm happy to report that we have a more optimistic view of the future, that humanity is still in a position to chart its own destiny. It's very much the path of the stories we tell, and in fact, their partnership is probably the best expression of the future, rather than the worst."

And then there is the refreshing character Olivia Hume, via actress Cynthia Preston. "She works at Uber Braun, which is one of our six Consortium companies that control 90 percent of the world's economy. Her role is in working with machines more like the advanced versions of the Beta androids, service androids. The impact of the existence of an android like Farve has major ramifications to her, the company she works for, and her husband, because she has a personal stake in that her father was killed by a warrior android back before this story started." In fact, Preston really impressed her would-be employers. "She was one of only a very few people we were considering for the role, and her electricity and intelligence and grasp of the needs of the genre made her an easy choice."

"I have to say, I've done a lot of series, I've been producing or writing television series for nearly 15 years now, and I'm very proud of this one. It's unusual and different—I think we're giving the audience an experience they don't [usually] get!"

Having taken a little time away after his last lead in *Two*, and more recently becoming forever tagged as the overly endowed model on the series *Ally McBeal*, Michael Easton assumes the heroic character of Detective David Hume; however, Easton was less than sold on the idea of a *Recall* series.

"In all honesty, when they originally called and said 'Do you want to read a script for *Total Recall*, it's a syndicated series being shot in Canada?' my first reaction was no way; it was a fun little movie but I didn't see it being a television series. And they go, 'I don't think it's what you're expecting.' And I go, 'All right, I'll take



grammed him [so I] have a partner and can never be able to trust him fully.

"Everybody has secrets on the show..."

One of *Total Recall* 2070's real treats, besides of course the great atmosphere and overall story line, is the talented and many-ways beautiful Canadian actress, Cynthia Preston. Funnily enough, it was her good fortune in landing a spot on *The X-Files* that nearly cost her *Total Recall*. "I was shooting a film in Vancouver, an independent called *Convergence*. I had just spoken to my LA agent who told me that I had this audition for *Total Recall*; I was supposed to fly back to LA on the Monday and they had set it up for Tuesday. Then I got an *X-Files*, so I was staying in Vancouver for a couple more days. So I ended up reading the following Saturday for *Total Recall*. We wrapped the film at five in the morning; we had shot for a day and an half and it was the last night of the film. I went home for like two hours and slept and then got up, went to my *Total Recall* audition. Sometimes when you are exhausted it's good because it's really raw. Other times you can't function. But I guess it was kinda raw because they were immediately into contract negotiations; I didn't have to go to a second call or anything like that. That was fortunate."

On this series of dreams and deceptions, Preston's character seems pretty straightforward; however, she provides her own set of tensions as an android architect. "Olivia Hume, the wife of David Hume. It's a won-

derful character to play because she is written intelligently, which is a change, and also to be a part of a healthy married couple is a real change. I work for a company called Uber Braun [and] help in designing androids. It's a real interesting character to play because of the relationship and the whole futuristic atmosphere of the show."

And for this actress the Sci-Fi experience couldn't be more entertaining. "Absolutely. It's totally exciting. Some jobs you get you kind of go, 'OK fine....' But this is nothing but exciting and I'm thrilled to be here.... They green-screen the city above and below me because we are in a 250 story city, and there was one scene where there is a hologram room around us, so that was interesting when you have to play to effects that aren't there. That's fun! That's just having good effects people around you to tell you what to see and have a good imagination and good people."

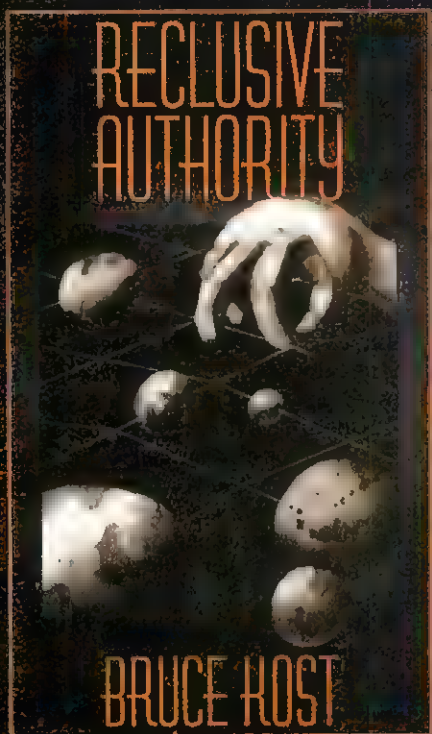
Preston is a true rarity in Sci-Fi drama, that is, she is both an SF enthusiast and science student. "I love going to the science center. I had to shoot one afternoon at five and my boyfriend was in town visiting. It was one o'clock, and I said, 'let's go to the Ontario Science Centre.' We had such a good time. We went to the LA science center and he said it wasn't as good as the Ontario science center. He actually put in phone calls to offer his services to improve the science centre; he does animatronics, robotics."

So, it's only natural Preston would draw on

her innate love of science when at play. "I'm doing research on it all the time. I'm reading a book called *The Cambridge Quintet* about these four scientists, set in 1949, who were very instrumental in the second world war. They had all these theorists, mathematicians, linguists, and behaviorists coming together to discuss artificial intelligence, which is what we are dealing with ... So I'm reading all this stuff which just fascinates me and I get to play this part and put it toward the character and story ideas."

With all the gizmos, implants, and VR begs the question in this world of wonder we must ask: How close does art imitate life? Could the show be a precursor of sorts for technology taken to the edge? "I know...if the human imagination can come up with it then they can find a way to make it real. It starts with an idea and then people figure out how to make it happen. That's what my boyfriend does in animatronics—you start with the sketch of an idea and learn how to make it happen. It makes sense to me that some of the stuff on *Star Trek* has come to pass."

But here in the now, Cynthia Preston is simply taking her good fortune in stride, knowing that there is much more out there waiting for her. "Now that I have this maybe I can be *The Total Recall Girl* and have that leverage in features or television. I love feature work, to have a couple months with a character. There are good things to be found and make the most of every opportunity that comes your way." □



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Science Fiction's answers to the future of sex can be found in questions millions of years old.



ABOVE: Scientists agree that there will be sex in the future, but we doubt it will be quite like that depicted in *Barbarella*.

FROM THE PRESIDENT TO THE GRANDMOTHER next door, everybody's interested in sex. But what does it have to do with Science Fiction? Will tentacled monsters from Arcturus really lust for Earth women? Could humans mate with beings from the stars to produce hybrids with superhuman attributes? Is there more to sex than just a chromosome's need to hang out with new companions? And, can even *SF Age* manage this discussion and keep it clean?

To take a look at the science behind everybody's favorite subject, we talked with top biologists Joan Slonczewski and Jack Cohen. Slonczewski is a research biologist, a professor at Kenyon College, and a well-regarded Science Fiction writer. Her book *The Door into Ocean* received critical praise for its treatment of planetary ecology. Her recent book *The Children Star* was published by Tor in September 1998. Cohen has been a consultant to Science Fiction authors from Niven to Pratchett, designing alien creatures and ecologies and helping them avoid scientific blunders. He is an internationally known reproductive biologist, who consults for test-tube baby and other infertility laboratories. His text books include *Living Embryos* (Pergamon); *Reproduction* (Butterworth's); *Spermatozoa, Antibodies and Infertility* (Blackwell); and *The Privileged Ape*

(Parthenon). With mathematician Ian Stewart he has written *The Collapse of Chaos* (Viking/Penguin '94), and *Fragments of Reality: The Evolution of the Curious Mind* (Cambridge University Press, '97). Moderating the discussion was *SF Age's* probing correspondent and freelance scientist, Geoffrey A. Landis, who was recently made a fellow of the NASA Institute of Advanced Concepts.

LANDIS: Let's talk about a scientific subject that's important to everybody. You can't have life without reproduction, but how about sex—is sex really necessary?

SLONCZEWSKI: Actually, the reason any kind of sex exists is that changing environments favor survival of individuals whose genomes can adapt to various conditions. There are alternatives to sex—mutation creates new variants. But sex is sort of a compromise; it brings in new genes that have worked for someone else, so they might help my kids, too. It's worth noting that any biological trait (such as sex) can evolve to include functions other than the original selection advantage. This is especially true in primates (including humans). Although the original survival advantage of sex was direct transfer of genes, the brain-pleasure component evolved other functions; such as helping individuals "trade" sex for food.

COHEN: Females who don't waste effort on production of males would theoretically contribute twice as much to the next generation, and all of her genes too; naive selfish gene ideas don't work. But organisms have gained/lost/reacquired sex many times—so they must be using math of a different kind. Short answer: because sex combines and recombines genes, so that individuals of a species are sufficiently diverse that viruses can't evolve to specialize on *all* of your progeny.

SLONCZEWSKI: There is always a tension and balance between genes seeking "the other," and genes seeking others the same as themselves. That is why populations evolve exclusion mechanisms, to keep individuals mating within the group; and yet they also evolve mechanisms that prevent mating with one's self and close relatives.

COHEN: Yes. Especially in mammals, where the female has a premium on time in the uterus, and can't afford less than her best options.

LANDIS: So would you expect that on alien worlds, something similar to sex would have evolved as well?

SLONCZEWSKI: Yes, I'd expect to see alien sex; since organisms on Earth as different as bacteria and humans do it, I would think on another planet they might too.

COHEN: Certainly that would be the default. Like photosynthesis, flight, and fur, the other "F" is a Universal. Specific kinds of heredity-swap may be Parochials, but sex is a Universal.

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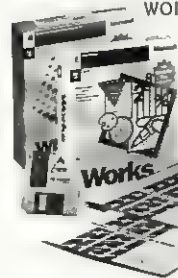
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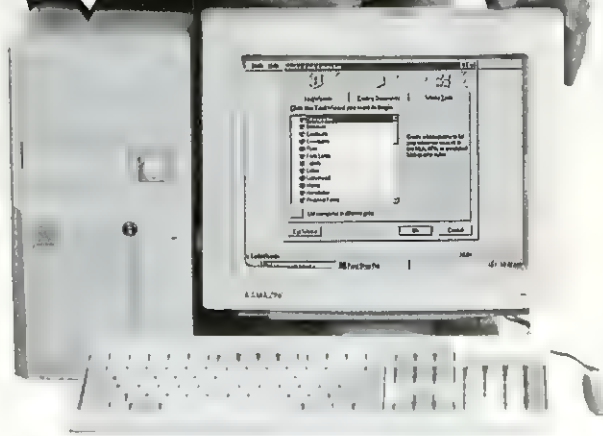
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LANDIS: So you have two radically different answers so far: Joan suggests that sex is in order to help genomes adapt, and Jack suggests it's to recombine genes so viruses can't evolve to specialize on your progeny. So is that all sex is? A way to avoid disease?

COHEN: Nothing in biology is "all it is." We're not dealing with an invented subject like physics, where you can genuinely be unicausal. I heard six reasons for a zebra's stripes last night—and the zebra ain't even trying ...! It works in the longer term, and has no prohibitive costs in the short term, I guess.

SLONCZEWSKI: There are certainly many fascinating examples of sexual recombination protecting from disease, showing the advantage of having two copies of the genome (one from each parent). The sickle-cell anemia gene is "recessive" (causes problems only when two copies are present). But one sickle-cell gene, with a normal gene, protects from malaria; that is probably why sickle-cell is so common in Africa. Another reason sex is good for multicellular organisms is that the level of mutation tolerance is lower where complexity is higher. So animals with a more rigid body plan are less able to tolerate developmental aberrations than bacteria or even plants. So there is greater survival value for exchanging things already known to "work."

COHEN: Not quite so. It seems to us that our complexity is bought at the price of genomic or at least developmental fragility. If we were human-designed this would perhaps be so. But, like Rolls-Royces, very much of the complication is to make the system more reliable. We know in detail how this happens for a few cases, especially physiological cases: Mammals can "take" much more temperature change outside. A bonus is that they can keep their development thermostated inside. Genome "balancing" and genetic assimilation are evolutionary processes which foster this.

SLONCZEWSKI: An interesting question

is, Will there ever be a good reason for humans to have sex with aliens—to incorporate their useful genes? My theory is that humans will eventually seek sex (or at least, recombining genes in some way) with aliens. Human medicine is gradually overcoming natural selection to engineer ourselves for "perfect" physiology. As this happens, our descendants will become too "perfect" and will ultimately need to find a supply of diversity from somewhere else.

COHEN: What genes? How about having sex with our fish cousins? Your second cousin the oak tree? Both much closer relatives than a Vulcan! If you're convincingly fertile with an oak tree I'll buy reproductive sex with aliens.

LANDIS: So you're saying that the *Star Trek* scenario, with many varieties of human/alien hybrids, may not be so far out after all?

COHEN: It's total nonsense, absolute fantasy. It's there because human actors are so cheap, compared with early drawing [CGI FX] technologies.

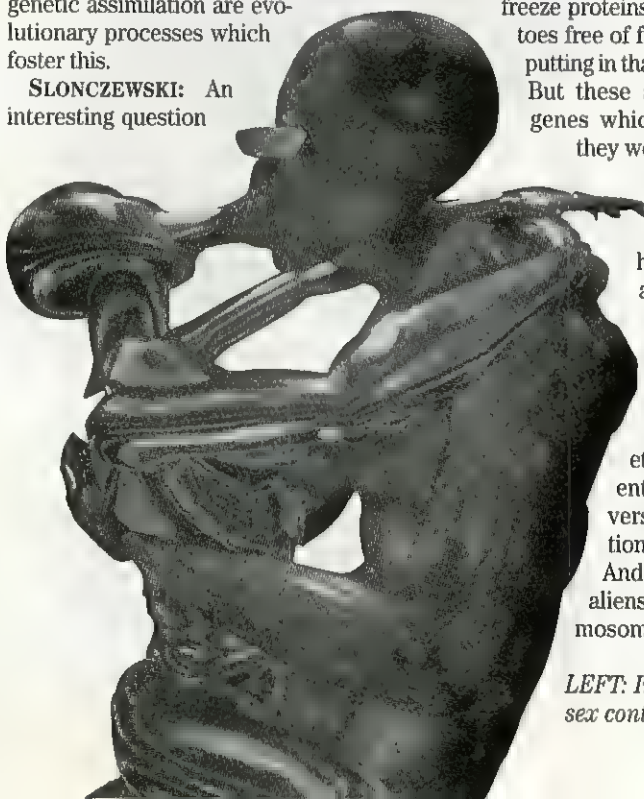
SLONCZEWSKI: In response to the *Star Trek* scenario, what is unrealistic is the idea that humans and "aliens" would look essentially alike and have copulatory mechanisms (and chromosome maps) so similar as to allow "natural" recombination. Nobody seems to have noticed that we humans *already* exchange genes with animals and plants, in ways that would have been unthinkable in all history until now. Throughout history, human groups have been concerned with "good breeding", with maintaining "pure blood." We routinely create mice, sheep, and cows that contain human genes. A mouse line produces human red blood cells—"human blood." Does anyone get upset about this?

COHEN: Good point. But the message here is "context." Mouse genes can be substituted by human genes of the same family; antifreeze proteins from fish can keep tomatoes free of frost damage—it's a way of putting in that protein to your tomatoes. But these are not, specifically not, genes which affect development. If they were, they would bend it out of a viable trajectory.

Think what all the lethal oddities do to human development. We are not simply our DNA-made-flesh, nor is DNA a pick-and-mix kit.

LANDIS: Would sex be different on alien planets?

COHEN: On alien planets, sex might not be different; perhaps the prokaryote versions, with all the variations, will be much the same. And I'm sure there's lots of aliens with diploidy (two chromosome sets, or whatever serves



LEFT: In *The Lawnmower Man*, sex continued cyberspace.

them for the vehicles of chemical heredity) and some with penises (and vaginas or equivalent—the two go together). There will be others with systems we don't have here at all, some like sea horses (see Harrison's Yilane, which I developed for *West of Eden*), some like our *Xenopus* toads, normally eating their own offspring (see the *Heorot* books by Niven, Pournelle, Barnes with my grendels).

SLONCZEWSKI: A trivial way in which sex is likely to be different is that the organisms may have a different structure of chromosomes. In *The Children Star*, I invented microbial aliens with circular chromosomes of triplex DNA. Organisms with triplex DNA might have to have three parents? Actually, that's probably a very unlikely scenario in real life. But you could have an RNA genome, or PNA (protein-backbone DNA). However, this is trivial, as genetic information stored in any molecule can easily be translated into a different molecule.

LANDIS: Would it really be plausible for a species to have three (or more) sexes? What is the evolutionary advantage here?

COHEN: Quite a lot of fungi do. And there are some organisms, like some corals and sea anemones, where the neuter gender nourishes the larvae produced by its relatives (and digests foreigners, except those that have evolved tricks to pretend to be related!). This third gender is a bit like worker bees, though, and perhaps shouldn't count as real third.

SLONCZEWSKI: It is hard to see an advantage to more than two different "genders," or functionally different mating types.

COHEN: I've tried to invent three-sex systems, but all of them would be "taken over" by degenerate two-sex versions with the same advantages and less trouble mating or meiosis. I didn't try three-strand hereditary material as a basis though. Great if it's really a credible system.

LANDIS: So what does it all mean?

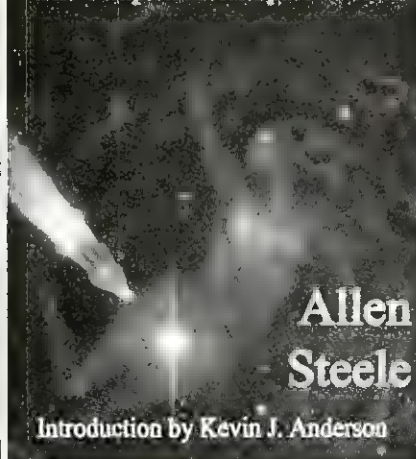
SLONCZEWSKI: What does all this DNA recombination, natural or otherwise, mean for our conceptions of humanity? Western religions, and the Age of Reason, seemed to emphasize human uniqueness; the inviolability of species meant that humans could have unique traits not shared by animals. Unfortunately, this theory tended to coincide with its more extreme variants; eugenics and racism, the idea that some groups of humans might have superior traits unavailable to others.

COHEN: But we do. Not genetic traits; all our genes belong to gene families found elsewhere with only small differences of sequence. The big difference is that we have extelligence, accumulating cultural capital as a major part of our heredity.

SLONCZEWSKI: Now that we can make mice with human blood cells, our philosophic pendulum has swung the other way. We now tend to return to polytheistic, even animalistic views—that perhaps animals and even plants can share humanness. This trend may be positive in many ways—and deadly dangerous in others. □

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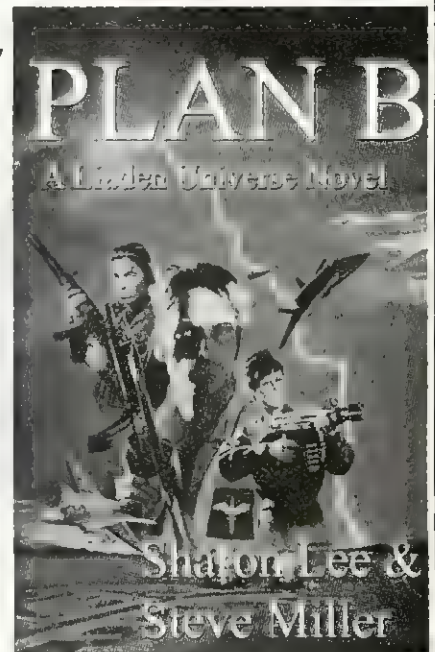
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W I T H McANDREW, FOCUS

*McAndrew, faced with the impossible,
considers attempting the unforgivable.*

THERE ARE SIGHTS IN THE UNIVERSE that man—or woman—was not meant to see.

Let me name an outstanding example. McAndrew, dancing; Arthur Morton McAndrew, hopping about like a gangling, uncoordinated stork, arms flapping and balding head turned up to stare at the sky.

"The first since 1604!" he said. He did not, thank God, burst into song. "Not a one, since the invention of the telescope. Ah, look at it, Jeanie. Isn't that the most beautiful thing a person ever saw?"

Not the most complimentary remark in the world, to a woman who has borne a child with a man and been his regular, if not exactly faithful, companion for 20-odd years.

I looked up. It was close to nine in the evening, on the long June day that would end our holiday together. Early tomorrow McAndrew would leave Earth and return to the institute; I would head for Equatorport, the first step in a trip a good

BY CHARLES SHEFFIELD

Illustration by David Beck



deal farther out. I was scheduled to deliver submersibles for use on Europa. As part of the deal for making the run, I would be allowed to dive the European ice-covered abyssal ocean. I was excited by the prospect. The difference between deep space and deep ocean is large, and sky captains and dive captains respect and envy each other.

Overhead, the cause of McAndrew's excitement flamed in the sky as a point of intolerable brilliance. The Sun and Venus had already set. Jupiter was in opposition and close to perihelion. The planet should have been a beacon on the eastern horizon, but today its light was overwhelmed by something else. What I was looking at was infinitely brighter than Jupiter or Venus could ever be. Instead of the steady gleam of a planet, the light above blazed like the star it was. But it dominated everything in the sky except for the Sun itself, visible even at noon, a light strong enough to throw clear shadows. For two days there had been no night in the northern hemisphere.

"A naked eye supernova!" McAndrew didn't want or expect an answer to his earlier question. "And so close—only a 103 light-years. Why, if we used the balanced drive"

His voice trailed away, but I've known the man for a long time. I suspected what he was thinking.

I said, "Be realistic, Mac. Even if you could fly out there in a reasonable subjective time, you'd be away at least a couple of hundred Earth years."

I was about to add, remember your relativity, but I didn't have the gall. McAndrew knew more about special relativity and time dilation than I would ever know. Also more about general relativity, gravity, quantum theory, superstrings, condensed matter physics, finite state automata, and any other science subject that you care to mention. What he didn't know, and would never learn, was restraint.

Our holiday was over, whether I wanted to admit it or not. We would spend one more night together, but McAndrew would not be in bed with me. Not all of him, that is. His body, yes, but his head was already a 103 light-years away. It would not be coming back any time soon. He wouldn't admit it to me, but even now he itched to be at the Penrose Institute, out in space where his precious observational tools could see far more than any instrument condemned to lie at the bottom of the murky atmosphere of Earth.

Me, I could look into the evening sky and see herringbone patterns of gorgeous rose and salmon-pink clouds catching the light of the supernova. McAndrew looked at the same thing and saw an annoying absorbing layer of atmospheric gases cutting off all light of wavelength shorter than the near ultraviolet. The Cassiopeia Supernova was flooding the solar system with hard radiation—and here was McAndrew, down on Earth, condemned to visible wavelengths and missing half the show.

"It will still be there tomorrow," I said. "You'll have a month or two before it begins to fade."

I might as well have saved my breath. He said, "If I flew south tonight, maybe I could get a predawn lift."

"Maybe you could." Actually, I knew the lift-off and transfer schedules in fair detail, and there was no chance of a launch that would get him one second sooner to the institute, which was free-flying now in an L-3 halo orbit. Also, the last evening of a holiday is supposed to be special.

"Sounds like you don't think I should," he said. And then, showing that he is more human than almost anyone in the solar system gives him credit for—he's supposed to be McAndrew, giant brain and intellect incarnate—he added, "Ah, now Jeanie, don't get mad at me. You know, I wasn't thinking of trying to fly all the way out to the supernova. But Fogarty and me, we've had an expedition in mind for a while to visit the solar focus. This would be a great time to do it. We'd learn a lot about the supernova."

"You might," I said. I did not add that I did not like Paul Fogarty. McAndrew could tell me, as often as he liked, that Fogarty was bright and young and inventive. Maybe he was all those things, but I thought he was also ambitious and snotty and obnoxious.

Pure personal vanity on my part, of course. Young Paul Fogarty had met me during one of my visits to the institute, learned that I was not a scientist but a mere cargo captain, and after that did not recognize my existence.

If McAndrew was trying to be nice to me for a final evening together, I was more than willing to meet him halfway. "If you want to go to the solar focus," I said, "then you should do it. Go and have fun. You deserve it. Not a long trip, is it?"

"Just a hop." He thought for a moment, and the only sign of Scottish ancestry appeared in his speech. "Och, Jeanie, it's not even that. We hardly need the balanced drive at all. Five hundred and fifty astronomical units to the solar focus, that's only 80-odd billion kilometers. If we take the *Hoatzin* and hold it down to a hundred gees, that's less than a week of shipboard time there and back—even allowing for turnover and deceleration. Don't worry that I'll be

gone long. I'll be home again and waiting for you when you finish playing the deep-sea diver."

Possibly. But I knew him of old. Get McAndrew into a situation of scientific interest, and he loses all sense of time and everything else.

When I emerged from the European ocean, he might indeed be back at the institute; but I wouldn't be at all surprised to find him still 80 billion kilometers out, sitting at the solar focus—the place where the Sun's own gravitational field would act like a lens, and converge light from the Cassiopeia supernova to a focus.

I tilted back my head to stare once more at the burning point of light in the sky. A hundred and three light-years away, but it shone on Earth a thousand times as bright as the full Moon. This was the closest supernova to Earth in all of recorded history. Maybe that was just as well. Much closer, and it would be a danger to all life on Earth.

Unlike McAndrew, I could be quite as happy without the Cassiopeia supernova.

I accuse McAndrew of things, but sometimes I wonder if I'm just as guilty myself.

THE EUROPEAN OCEAN IS EERIE AND SPECTACULAR AND UNLIKE ANYTHING ELSE in the solar system. People talk about the silence of space, floating in the void beyond Neptune with all engines off. Fair enough. But I've been there, and I can tell you that it's nothing like as uncanny as the quiet of Europa's abyssal ocean, a hundred-kilometer depth of water and above a thick shield of ice-cap to seal you off from the rest of the universe.

I loved it. The young captain who piloted the *Spindrift* was half my

*Their goal
was an AI far
beyond the
known limits
of either
humans or
machines.*

age, flatteringly attentive, and a few times he allowed me to take the controls of the deep submersible. We drifted along just above the ocean floor, very slowly, so we would not disturb the sea-floor furrows with their rows of aperiodic self-reproducing crystals, Europa's own contribution to life in the solar system.

Of course I stayed down longer than expected—as long as I could. When we finally surfaced through Blowhole it was because we were running low on air and supplies, not on interest. I looked at a calendar for the first time in a week and realized that McAndrew might have left and already returned. Chances were against that. My bet was, he was out at the solar focus, fooling around with his instruments and totally unaware of what day or week it was.

Communication to space from the European deep ocean is difficult and reserved for emergencies, but it was easy enough to send messages from the surface station at Mount Ararat. I called the Penrose Institute, personal to McAndrew. Then I spent the 70-minute round-trip signal delay packing my bag in preparation for the ascent to Jovian system orbit.

I rather expected a "Not Present" return signal, together with a message that he was out at the focus. Instead, when the screen filled it showed an image of McAndrew's face. He was scowling, not at all like a man who had just returned from an exciting and successful journey.

"Aye, Jeanie, I'm here." His voice was decidedly mournful. "And I suppose you can come see me if you feel like it."

Not the world's most enthusiastic invitation, even by McAndrew standards. What had happened to his supernova-generated excitement? The newcomer in Cassiopeia still blazed in the sky as brightly as ever, but there was no joy in McAndrew.

Rather than attempting questions with a 70-minute delay on the answers, I said goodbye to Europa and headed sunward for the institute.



MCANDREW DIDN'T MEET ME WHEN I docked. That was all right. I had been to the institute often enough, I knew the layout of the place, and I knew exactly where his office was. He would probably be there now, staring at the wall, theorizing, cracking his finger joints, oblivious to the passage of time. It was no surprise that he did not meet me.

What did surprise me was old Doc Limperis, hovering near the lock when I emerged to the institute's interior. Limperis was long-retired as director of the institute, and he could have had his pick of solar system locations. But as he said, where else would a man interested in physics want to be?

He approached me, held out his hand, said, "Jeanie Roker, how are you?" and then continued without a pause for breath, "Maybe you can get through to him, because it's certain sure none of us can."

He didn't need to say who. For many years, Limperis had been McAndrew's closest friend and champion at the institute. All the same, it was a curious opening. Limperis possessed all the social skills that McAndrew lacked. He was not one to plunge straight into business.

"It went badly?" I took my cue from him. "The trip to the solar focus didn't work out the way it was supposed to?"

"Not at all. The trip went very well. It is going very well."

It took me a second. "You have an expedition out there right now. And McAndrew's not on it?"

"That is correct." Limperis led me away along the corridor—in a direction, I noted, opposite to McAndrew's office. "There has been some—er, some disagreement with the director. Some unpleasantness."

"What did he do?"

"It's more what McAndrew refused to do. Do you recall the name of Nina Velez?"

"Oh, Jesus. Is he mixed up with her again?"

Nina Velez was the daughter of President Velez, and for a while—until, in fact, they had been marooned together for weeks in the three-meter life capsule of the prototype balanced drive—she had been infatuated with McAndrew. Enforced intimacy had put an end to that. It was all years ago, and I really thought that he had learned his lesson.

Limperis nodded. "I'm afraid so. Ms. Velez, as you may know, now has a senior position with AG News. She somehow learned, by means unknown to us, that an expedition was planned to the solar focus. She offered money for permission to send a representative with the expedition, and for exclusive media rights."

"Sounds reasonable to me."

"And to Director Rumford. I should mention that the money offered was, by institute standards, most considerable."

"But she wanted to be the representative, and McAndrew refused to take her?"

"Not at all. She wanted her new husband, Geoffrey Benton, to go on the expedition. Benton has scientific training, and has been on half-a-dozen expeditions within the solar system."

"I know him. Tall, good-looking guy."

"Then you may also know that he has a fine reputation. Savvy, experienced reporter. McAndrew was all agreed. Then something happened. I think Mac met with Benton—just once—and afterward went to the director. He said Benton would go on an expedition with him, McAndrew, over his dead body."

"But why?"

"That's something I rely on you to find out—he won't tell me or anyone else. Director Rumford said, rightly in my opinion, that McAndrew's attitude left him little choice. In these days of shrinking budgets, we need the funds. Paul Fogarty would lead the expedition to the solar focus instead of McAndrew, and Geoffrey Benton would go with him. That is exactly what happened. It has not left McAndrew in the best of moods, and I wanted you to know that before you meet him."

He paused. "And, of course, although this is strictly speaking no concern of mine, I would like to know what is really going on."

Shrewd old Limperis. A razor-sharp mind lay behind the innocent, pudgy black face. He sensed, as I did, that there had been a set-up. On questions of theoretical physics, McAndrew sits among the immortals. On matters involving human motivation and behavior, he is an innocent—and that's being kind.

"Let me talk to him," I said. "Is he in his study?"

"There, or more likely in the communications center." Limperis hesitated. "I should mention that Fogarty and Benton have reached the solar focus, and they are obtaining spectacular findings concerning the supernova. McAndrew's mood is ... hard to judge."

I knew what he meant. McAndrew should have been experiencing one of his big thrills in life, the rush of data on a new scientific phenomenon; but instead of being on the frontline, he was getting it all secondhand. To someone like McAndrew, that is like being offered for your dining pleasure a previously eaten meal.

He was in the communications center. I approached him uncertainly, not sure what his mood might be. He looked up from a page of numbers and gave me a nod and a smile, as though we had just seen each other at lunch time. And far from being out of sorts, he seemed delighted with something.

"Here, Jeanie," he said. "Take a listen to this. See what you think."

He handed me a headset.

"What is it?" I asked.

"Report from Fogarty. He was heading for the solar focus, but the media asked him to put on a bit of a show for them, just to demonstrate what the *Hoatzin* can do. Of course, he couldn't resist. They went zooming all the way out past 300 billion kilometers, horsing around, then wandered in again toward the focus. I want you to hear what they picked up on the way back. It came in a while ago, but I only just got round to it."

"Shouldn't I—"

"Listen to it. Then we'll talk."

McAndrew!

I put the headset on.

"We are on the way in again, approximately 280 billion kilometers from Sol." Paul Fogarty, his voice young and slightly nasal, spoke in my ears. "We are heading for a solar focus point appropriate for receipt of radiation from the Cassiopeia supernova. The *Hoatzin* is performing perfectly, and we normally turn off the engine during flight only for observations and sampling of the local medium. However, anomalous signals received in our message center are prompting us to remain longer in this vicinity. We are picking up a message of distress from an unknown source. We have traveled to various locations, but we are unable to discover a message origin. We will keep looking for another 24 hours. After that we must proceed toward our original destination of the solar focus. The received message follows."

I listened, wondering who could possibly be sending a call for help from so far away. Two hundred and eighty billion kilometers, 60 times the distance of Neptune, way south of the ecliptic, and far beyond normal solar system runs. No cargo or passenger vessel ever ventured in that direction, or so far out.

Help, help, help. The standard Mayday distress signal was the only clear part of the message. "... limited chance for transmission ... every year or two" The voice was thin, scratchy, and distorted. "We transmit when we can, aim at Sol" Help, help, help. "... we'll keep sending as long as possible. We have no idea what's happening outside ... are trapped ... except for this chamber. No control of resources except this unit"

Help, help, help. The automated Mayday signal bleated on, over and over. I heard nothing more from the desperate human voice.

McAndrew was watching me closely as I removed the headphones. "Well?"

"It couldn't be clearer. There's a ship out there in bad trouble, even if we don't know what kind of trouble."

Mac said, "Not a ship."

"What, then?"

"I'd guess it's one of the arks."

That made me catch my breath. The arks were part of history. Before McAndrew and I were born, 17 of the great space habitats had been launched by the United Space Federation. Self-contained and self-supporting, they were multigeneration ships, crawling through the interstellar void at a tiny fraction of light speed. Their destinations were centuries away. But even at minimal speeds, they ought by now to be well on their way to the stars. They should be far beyond the place where the signal had been picked up.

McAndrew's suggestion that it was one of the arks seemed unlikely for another reason. "I don't think it can be," I said. "As I recall it, none of the arks was launched in a direction so far south of the ecliptic. And I don't believe they were capable of significant changes of direction."

"Perfectly true. They could start and stop, and that was about all." McAndrew gazed at me blank-eyed as the Sphinx. He knew something he wasn't telling.

"But in any case," I went on, "I can't believe that Fogarty would simply leave them like that, and keep on going. They said they were in trouble."

"They also implied it isn't a new emergency—they've been transmitting for some time. Anyway, Paul Fogarty didn't just listen and run. There's more from him. He stayed far longer than he expected,

searching and searching; but he couldn't track down an origin for the signal."

"But that's ridiculous. He *must* have been right on top of it, to receive it like that."

"You think so?" McAndrew, that great ham, was full of poorly disguised satisfaction. "If somebody knew where that signal was coming from, do you think that they should choose to go out on a rescue mission?"

"It wouldn't be a question of choice. They'd *have* to go."

"Exactly." McAndrew didn't rub his hands together, but only I think because he was tapping away at the keys of the console. "I'm checking out the reconditioning of *Merganser*. If it's ready to fly, you and me will be on our way. And don't worry, we'll be going with Director Runford's blessing. I've already asked."

"But if Fogarty couldn't find the ship—"

"Then he must have been looking in the wrong place, mustn't he? In a very wrong place. Wait and see, Jeanie. Wait and see." And beyond that, for all my coaxing and urging and outright cursing, McAndrew the mule would not for the moment go.

A

toward it at close to a hundred gees, leaving us with a residual quarter-gee field. Very comfortable, great for sleeping.

And sleeping is what we might be doing, much of the time. Even

accelerating at a hundred gees, we had a lengthy flight ahead of us. We could lie side by side in the cramped life capsule and sleep, relax, play—and talk.

McAndrew had been a clam when it came to our destination, but it had not escaped me that we were going in exactly the wrong direction, toward Cassiopeia rather than away from it. The solar focus for the supernova lay on the other side of the Sun. I mentioned that fact casually, as though it was something of minor interest.

"Quite right." He was in his bare feet, wriggling his long toes and staring at them with apparent fascination. "If light comes toward Sol from a very long way away, so it's close to being a parallel beam, then the gravity field of the Sun acts as a great big lens. Light that passes close to the Sun is converged. It is brought to a focus 82 billion kilometers away, on the far side of the Sun. So if you want to observe the Cassiopeia supernova, which is way north of the ecliptic, you have to go south."

"Which is what Paul Fogarty did."

"Aye. Him, and that Geoffrey Benton." McAndrew gave me a strange look, which I could not interpret.

"And the place where they heard the signal was south, too," I said. "But we're going north."

"We are indeed." McAndrew looked smug. "Here's a question for

Continued on page 76

*The bodies
had been there for
a long time; not
one had on a
spacesuit.*

UNEQUAL LAWS

THE KILLER'S CRIME HAD OCCURRED BACK ON EARTH, MILLIONS OF MILES AWAY. BUT GETTING AWAY TO A NEW WORLD DIDN'T MEAN ONE COULD ALSO GET AWAY WITH MURDER.

PHIL CARMICHAEL WAS SITTING AT his desk trying to remember how he'd let himself be talked into running for Mayor—and, what was worse, running *unopposed*. That should have been enough to warn him off the job—but with the former Mayor, Attorney General, and Chief Justice convicted of conspiracy, there'd been a shortage of candidates and a need for someone to restore order. Or so Carmichael had been told at the time. He still wished he'd kept his old job.

The phone chimed, and he reached for the switch with startling speed. A hologram of Josh Wilkins, a former Deputy who'd replaced him as Sheriff, appeared above the desk. "Phil? You busy?" Carmichael stared at him balefully. "I've been looking through the messages from the ship that's in the system at present.

BY STEPHEN DEDIMAN

BEFORE THE WORMHOLE

any journey outside the solar system

the *Ulysses*," Wilkins continued. "We have an immigrant, a Dr. Laura Strong, approved by our embassy on Earth. She's on the ship, and waiting clearance to land a shuttle."

"What?"

"Well, more probably at the waystation by now, but they need a decision before the wormhole reopens." Carmichael blinked. "Before that, even. The shuttle needs—"

"How long? And how did she get here without—where the hell is this message?"

"Mailing the file to you now."

Carmichael drew a deep breath, and watched as the pages appeared across the top of his desk. Their agreement with the Earth and the other worlds, signed barely five years before, was that Ivory wasn't to be visited for 10 Terran years. "Have you read this?" he muttered, as he scanned the documents.

"Not much of it." Wilkins could react faster than he spoke, but he was a slow reader.

"You'd better; I'm having trouble believing my eyes. It says here she paid her own way."

"Jesus," muttered Wilkins. "How the hell did she afford—where does it say that?"

"Page seven. She's made her money from patents in genetics and nanotech—medical and agricultural." He whistled softly. "Her gene scan looks perfect, she's single and only 37, IQ 161, and ..." His eyes bugged slightly as he called up the holograms of the applicant, and Wilkins followed suit. Even in miniature, the woman was a veritable Valkyrie, all gold and ice.

"Sounds too good to be true," said Carmichael, sourly. "I wonder what she's running away from."

"Aw, come on. Why d'you always have to look on the dark side? Why *wouldn't* she want to come here?"

Carmichael shrugged, and searched the application for the record of her interview, to see why she'd said she *did* want to come to Ivory. She'd stated that she'd chosen the underpopulated world because there was more there for a genetic engineer to do. That, Carmichael knew, was true enough; the planet's native fauna and the terraforming ground cover generated just enough oxygen for the settlers to breathe, but attempts to farm the land were progressing slowly, badly behind schedule, and too much food was still being produced in greenhouses. Strong said little in the interview about her political beliefs, which was unusual but not unprecedented. Carmichael sighed. There were many good reasons for accepting her, and no logical ones for turning her away, only his memories of the last time offworlders had visited Ivory—a visit that had resulted in one murder, near riots, the arrest and conviction of some of the planet's most important citizens, a surge in domestic disputes and separations and a subsequent drop in the birthrate, and months of political chaos. "Send a message to the *Ulysses*," he said, wearily. "Tell them they have permission to land a shuttle, and I'll be there to meet Dr. Strong."

"Do you want to tell Dean Bennett?"

Oh, *shit*, thought Carmichael. Adam Bennett, the settlement's dean of genetics, was a close friend. "Yeah," he said. "I'll tell him."

MADOLON SCHAEFER DIDN'T SPEAK DURING ENTRY TO THE atmosphere—*re*-entry, for her. Her passenger was also silent, but she'd been quiet for most of the trip from Earth, simply because none of the crew had shown much interest in talking to her. Madelon scanned the landscape until she found a familiar-looking bend in the river, and steered south. "What's so urgent that you had to come here in such a hurry?" she asked.

"What?" Laura blinked, then reluctantly turned away from the view to look at the pilot. "Actually, it was partly your report," she said, coolly.

Madelon took that one without flinching. "What part of it?"

"The fact that their only geneticist had died, leaving them with a graduate student and no gene bank, on a planet where the indigenous fauna hadn't been adequately studied. That's a recipe for disaster, especially among a genetic monoculture with reduced divergence in disease immunity—how much genetics do you know?"

"I'm with you so far. You want to study the effects of inbreeding?"

"I'm a little early for that," replied Laura, drily. "I just didn't want to leave a struggling settlement without scientific expertise, particularly as they're the only settlement to have deliberately limited their gene pool—unless you count the Sapphians, and they've only excluded one chromosome."

"A mercy mission?" said Madelon. There might have been a hint of irony in her voice, but Laura wasn't sure.

"Justice, not mercy," she said. "I gather most of the crew feels that the Ivorians should just be left to die?"

"Some of them might," admitted Madelon.

"What about you?"

"I've been there."

"I know, but that's hardly an answer."

Madelon shrugged. "A friend of mine was murdered there. I suppose that makes me prejudiced."

"I understood he was killed by one individual, not the government. Do you think it's fair to judge the whole settlement because of that?" asked Laura. There was no hint of irony in her voice or expression, merely curiosity.

"No," said Madelon, more calmly. "There are some decent people there."

"You spoke quite highly of Carmichael, the Sheriff."

"He actually tried to help us find David's killer." They were close enough to the ground now to make out individual trees—mostly pine, spruce, and fir. "I just don't understand how someone like that could also believe ... look, you're a geneticist, do you really think that you're

DRIVE WAS INVENTED,

was one-way, not only for the travelers but their descendants.

automatically superior to most other human beings simply because of your race?"

Laura looked at Madelon's ash-blond hair, and shrugged. "Race, no. Genes, maybe. I don't agree with the Ivorians about everything, of course, but that's not why I'm here; I'm here because this is where I can do the most good." Madelon was silent, and Laura smiled slightly. "There are hundreds of qualified geneticists and genetic engineers on Athene, Tvashti, Sappho, and all the newer settlements took at least a dozen each, two or three per thousand people. Many of them are very good. Only Ivory tried to get by with one geneticist, a technician, and no genengineers. Did you ever meet Adam Bennett?"

"Yes."

"What was your assessment of him?"

"Rational enough," said Madelon, neutrally. "Carmichael trusted him, and he was a fair judge of character. I don't know how good a geneticist he was, but David didn't ask him for any help. I don't know why Earth let the *Forrest* go with so few scientists, most of them already old; maybe ..." She stopped in mid-sentence, though she was sure that Laura Strong would have guessed what she was about to say; that many on Earth would have been glad to see so many of the planet's hardcore white supremacists leave, and not particularly concerned about their survival. "Maybe they thought that their freedom to build themselves a homeworld was more important than their safety. After all, they had the numbers, all volunteers, and the *Forrest* and their equipment were all paid for ... I don't know much about Earthian politics, but I don't see how they could have stopped them going."

Laura nodded. Before the wormhole drive was invented, any journey outside the solar system was one-way, not only for the travelers but their descendants. Even communication took years each way—nearly 17 years between Ivory and Earth. Very few people were willing to be isolated that thoroughly from the rest of humanity, not even for *lebensraum*: there was plenty of room on Mars and Luna for isolated communities, and for those who found Mars too crowded and Luna too near Earth, there were many unclaimed asteroids. "I'm sure they could have thought of something," she said, drily. "If there'd been another group of settlers they preferred, they could have financed another launch ... but there wasn't, and they didn't. There are still two habitable worlds out there, nearly terraformed, that no one seems interested in settling. Where are you from?"

Madelon was silent as she picked a likely spot for a landing. "Athene," she said, when they were down.

"Why did you leave?"

"Curiosity, I guess. When they built the *Altair*, I had a chance to see other worlds, and not through a telescope, so I signed on and took it."

"What did you think?"

"About what?"

"The other worlds."

"Earth is fascinating, and I'm glad I've seen it, but I don't think I'd want to live there. I liked Mars, and I have a lover there who says he

wants to marry me, so I may call his bluff when I've finished with the *Ulysses*. I should be able to find some work in the asteroid belt, and it's only a few light-minutes from Earth, which seems a pretty good compromise." She looked down at the instruments. "Your tilter should be here in about 10 minutes."

"Thank you."

There was another long silence, then Madelon asked, "How long do you expect to stay here? How long will your work take?"

"It will take as long as it takes," replied Laura, coolly.

"We'll be passing through again in 37 standard days. Deadheading back, so there'll be room. After that, the *Ulysses* isn't scheduled to pass through the system for another standard year, and after *that*—"

"I know what I'm doing," replied Laura, and neither of them spoke again until the tilter landed outside. Madelon recognized three of the four men who walked out—Carmichael, van Neukirk, and Bennett. All but the fourth wore long buffalo-hide coats against the cold. The fourth man wore an obvious uniform, in butternut, with a rocket pistol on his hip. Madelon walked down the ramp to the ground ahead of Laura, careful to keep her hands in plain sight of the gunman. "Dr. Strong, Sheriff Carmichael, Dr. van Neukirk, and Dean Bennett."

"Mayor Carmichael," said Wilkins. Carmichael looked slightly embarrassed.

"They promoted you?"

"Elected," muttered Carmichael. "You can *decline* a promotion. Josh here is the new Sheriff. So, how're you?"

"OK," replied Madelon, with little warmth but no hostility. "You're looking well," she said; the coat made it hard to be sure, but Carmichael seemed to have lost at least three or four kilos since their last meeting. "Sorry I can't stay—oh, Pieter, you asked me to tell you when we'd found a habitable world that's even farther out than Ivory? We've found *five*, and there's room on the ship now; I can take you with me ..."

It was the astronomer's turn to blush. "Thanks for the, uh, offer, but I'm getting too old to travel—besides, I haven't finished my work here yet and there's no one to, uh, take over from me. Besides ..." He glanced at Carmichael.

"No emigration allowed?" van Neukirk shrugged, and Madelon relented. She reached into her jacket pocket, and removed a box of discs. "There's all the latest astronomical data." She handed it over, then glanced at the huge pistol on Wilkins' hip. "Or should I give it to the Sheriff to be censored?"

"No, I'll take it," said van Neukirk, before Wilkins could speak. "They, uh, trust me."

"OK. Dr. Strong, I hope you enjoy your stay; maybe we'll meet again somewhere. Gentlemen ..."

"I'M SORRY SHE WAS SO RUDE," SAID LAURA, AS WILKINS CARRIED HER luggage to the tilter, "but the rest of the crew was worse."

Carmichael shrugged it off. "She has bad memories of this place, and the rest just believe what they've heard. I'm sorry we're not much

WHEN THE FORREST

a freezer full of embryos. Problem was, somebody

of a welcoming party, but we didn't get much warning that you were on your way."

"I'm sorry about that, too, but I suggested to your embassy that the sooner I came here, the better, and they agreed. The figures on your crops aren't encouraging, and your birthrate—"

Bennett looked up at the disappearing shuttle. "You can thank them for part of that. We've all but had a civil war here since the *Altair* landed."

"Between who?"

"Men and women. We actually had a referendum on whether or not to introduce a divorce law."

"Did you?"

"Nah. It was only 59 percent for; to amend the constitution requires a two-thirds majority."

"What caused the ... conflict?"

Carmichael sighed. "Five years ago ... no, I'd better start at the beginning. You'd better strap yourself in; the way Josh flies this thing, you'd think it was a surfboard. When the *Forrest* left Earth, we had a freezer full of embryos, so we could keep introducing new genes into the pool. Problem was, somebody destroyed all the human embryos while we were en route. We didn't find out who'd done it, and why, until five years ago when the *Altair* was here. Seems our first geneticist, Dr. Thompson, and a few others had arranged to stock the bank with nonwhites to be used as slaves, and a group of women had put them all into the matter recycler rather than let that happen. You've probably read this in the reports." Laura nodded. "That was where it stood when the *Altair* left, so the rest of the story isn't so well known. Suddenly we had two groups of conspirators, and public opinion split pretty close to the middle as to which was more guilty. Most men wanted the four women executed as multiple murderers, but a lot of women agreed with what they'd done. On the other hand, a lot of women wanted the men who'd helped Thompson—who was long dead by this time—punished instead or as well. A lot of couples split up arguing about it, and still haven't gotten back together enough to, well, to raise any kids. We didn't want this getting out; if the population drops too low, Earth has the right to claim part of the planet. Of course, we could get more embryos from Earth, but I don't think a lot of the women here would trust them anymore."

"There are some who want to change the agreement with Earth, and take our chances on getting more migrants in than out. They haven't gotten together enough signatures for a referendum yet, but they could, easy; most likely they're waiting until they're sure they have the numbers to win."

"You sound as though you're against it," said Laura.

"I am. I'm scared we'll lose too many people—and too many of the wrong people." He glanced at van Neukirk, who shrugged.

"Some people see the, uh, glass half full," he said to Laura. "Phil sees a drunk on his way home to beat up his kids."

"Oh, sure," said Carmichael. "And when was the last time an astronomer gave us any good news?"

"There's the town," said Bennett, nodding at the domed greenhouses. "I'm sorry we don't have a lab set up for you, Doctor, you'll have to share mine for the time being—"

"Give the lady time to settle in," said Carmichael. "We *did* have time to prepare a room for you, at least. Days here are 60 hours—sixty point five four eight Earth hours is close enough, if you want to reprogram your coms—so you've got a long wait for sunset, but nobody's going to mind if you want to sleep for a while; we run on a 20-hour clock. Or we can get you some food, but I should warn you, it's nothing to get too excited about. If we'd known you were coming, we could've killed a fatted calf, had a big party, it would've been great for morale, but I'm afraid that'll have to wait. Sorry."

WHAT'S THE POPULATION NOW?" ASKED LAURA, LOOKING around the huge, empty dining hall between mouthfuls of stew. She estimated that it was large enough to hold nearly a thousand people if the tables were removed. She'd only had a brief glimpse of the adjoining kitchen, but it seemed large enough to barbecue several bison, if not a mammoth.

Carmichael and Bennett looked at each other, then Bennett repeated the question into his wristcom. "4984," replied the city computer.

"Do you want that broken down at all?" asked Bennett.

"Later. I see what you mean about the birthrate, though. It's been 10 standard years since you landed, and even without the gene bank, all the models predicted that the population should at least have doubled by now. What's happened? Even allowing for a drop in births in the past few years, the population's increased by less than 16 percent in a decade. Even the Sapphians have had a faster rise."

"We've been working hard to get set up here," said Carmichael, defensively. "You come home tired, and the women are tired too. The farming hasn't gone as well as the models predicted, and most folks don't want to have kids they're not sure they can feed."

Laura raised an eyebrow. "That bad?" She took another mouthful of stew. "This is delicious, by the way; what's in it? Real meat?"

"Some," said Bennett. "Mostly pork. A little buffalo, venison, antelope ... no mammoth, if that's what was worrying you. But they're mostly grain-fed, and most of them still come out of the artificial wombs and are raised in barns. It gets very cold here, especially during the long winter nights. We were hoping that a few good buffalo herds would increase the methane content of the air by farting and cause a greenhouse effect, but the buffalo aren't coping with the cold either; a lot of newborns don't make it through their first night unless they're born under cover. And the year's so short—a little under 216 standard days, which means you only have about 20 local days to a

LEFT EARTH, WE HAD

destroyed all the human embryos while we were en route.

season, so breeding cycles that are suited to an Earth year are useless here. This may be why the animals aren't breeding either, though it's more probably a food shortage again. Almost none of them can live on the lichens they used to terraform the place, except the caribou, so we're breeding more of those. The lichen was meant to create enough topsoil to allow grass to grow, but it's holding its own against the grass better than we expected, or maybe it's just that the grasses don't survive the nights as well. Either way, some people are saying the settlement was intended to fail, that the genetic engineers on Earth meant us to starve."

"Do you believe that?"

"Nah. Most of the work was done by people we trust, or at least checked by them. A lot of folks here don't hold with genengineering—of plants, sure; of animals, maybe; but of humans ... that's one of the things they left Earth to try to avoid. And when life forms are chosen or designed for a mostly unknown environment, you expect some glitches. Maybe John—Dr. Thompson—could have redesigned some of the stuff, but I'm just not in that league. So we're not making much headway. We're not starving—the aquaculture division is doing well, and if some of the religious types around here don't want to eat pork or seafood, that's their look-out."

"You have people here who keep *kosher*?" asked Laura, amusement and incredulity plain in her voice. Carmichael and Bennett glanced at each other again, and the Mayor shrugged.

"Some of the Identity Christians believe in the Old Testament rules on diet," said Carmichael, "but I wouldn't use the word 'kosher' around them unless I was prepared to spend the rest of my life in armor; they also think that Jews, who they call 'Khazars,' are descended from Cain, who was descended from Satan."

"They're also the ones who're most against genetic engineering," said Bennett, "but they won't try to convert you if you don't try to convert them. It's one of the unwritten laws around here—otherwise there'd be so much argument that we'd never get any work done." Carmichael glared at him, but Bennett ignored it. "That's been one of the other problems the crop failure has caused; too many of us are stuck in town, living in each other's pockets, and that's not why we came here. I'm a city boy myself, but some of these people hate the very *idea* of cities; they had to spend nearly all of the flight in coldsleep so they wouldn't have to mix with people with different ideas. Some of our worst hotheads have been banished out to fishing villages on the coast, where a lot of men tend to fall off the boats and not make it back to shore. If we had more working farms, we could spread out more, let the Klansmen and the Nazis and the Australians and the AWB and all the others have their own little communities with their own bylaws, and people who didn't want to come to town wouldn't have to, they'd just send their kids here for some of their education ..."

Laura looked at Carmichael, who shrugged. "It's not quite as bad as Ben makes out," he said. "Most of us work too hard to have much energy left over for politics—"

"Brawling," Bennett translated, "and occasionally duelling."

Another shrug. "I don't think of brawling as a problem, and I don't worry too much about duelling as long as it doesn't lead to feuding—and, yes, sometimes that happens. But I won't execute somebody for winning a duel; that way, you just end up with a feud between his people and the law. Shooting at an unarmed man, or a kid or a woman, that's different."

"How many people have been executed since you landed?"

Carmichael was silent, and Laura wondered if she'd overstepped the mark. "Not counting those who disappeared while on fishing trips?" asked Bennett, his tone carefully light.

"Not counting them."

"Fourteen," muttered the Mayor. "A little more than one a year."

"For murder?"

"Six of them. Of the others, three were for rape, and five for adultery. Why?"

"Just curious. The figures for rape seem surprisingly low."

Bennett coughed. "Before Phil gets started, that was a bone of contention between him and the legal fraternity all the time he was Sheriff. He'd arrest men for raping their wives, but they wouldn't prosecute." Carmichael looked sour, but didn't disagree with the summary. "And there've been other cases that didn't get to court because the accused didn't live long enough. A lot of our women have brothers."

"What do you do for lesser offenses? Banishment to one of these fishing villages?"

"Sometimes," replied Carmichael, glad of the change of subject. "Sometimes just extra work detail, or loss of privileges, or restraining orders. Somebody with a grudge or bad reputation might be forbidden to carry a gun outside his home ..."

"But not from owning one?"

"Around here? I might as well sentence him to execution without trial."

"What if it's his family that's in danger?"

"If we have reason to think there's real danger," said Carmichael, "we'll send him somewhere to cool off." Bennett mimed swimming, nearly knocking over his coffee. "I should warn you, Dr. Strong, that a lot of folks aren't going to like being asked questions like this. A lot of them think that it was social scientists who made such a SNAFU of life on Earth. Just friendly advice, but if I were you, if there's any information about people that you need and can't get from the com, I'd ask Ben here, or myself, or Piet, if he can help you."

"What if I want to ask a woman?"

"My wife," suggested Ben. "Aline. She's a lawyer, too. Anyway, would you like to see your quarters?"

LAURA LOOKED AROUND THE SMALL LIVING ROOM COUNTING THE DOORS, then opened her cases. "Sorry there's so little furniture," said Aline. "We didn't have much time to get it ready for you, but at least there's a bed, a bathroom, a kitchen, and it's close to the genetics lab and the

THE LAW DOESN'T ALLOW

be executed, so she's stayed alive by staying pregnant. She's

canteen; you won't need to go out in the open at all unless you want to. We'll try to get you some chairs later, and anything else you need."

"It's meant for a family, isn't it?" asked Laura, as she removed a book-sized com from her case. "Yes. We don't have any single women's quarters—hell, we don't have any single women over 15, though we would have if the divorce laws were changed, believe me—and we thought you'd prefer this to a dorm. Of course, it's up to you ..."

"No, this is fine," said Laura, hastily. "It just feels as though somebody lived here before, and I wondered what happened to them."

"They moved to a farm," Aline replied, then, grudgingly, "It wasn't entirely voluntary."

"Banished?"

"She was one of the medtechs who destroyed our gene bank. She was sentenced to death, but the law doesn't allow pregnant women to be executed, so she's stayed alive by staying pregnant between her appeals. She's confined to a farm, and her husband's one of the guards. I suspect it's not much of a life for either of them, or for anybody else out there, but it's the best deal I could get them."

"You were their lawyer?"

"For all of the women, yes. I'm the only female lawyer here, and none of the men would touch the case."

"How long have they been there?"

"About four children each." She looked at the case, then did a double-take. "Is that a gun?"

"This?" Laura picked it up. "Yes, it's a low-frequency sonic weapon. They're called quakers—at least, when there aren't any real Quakers listening. They're noisy, and can't be silenced, nonlethal enough to be legal almost anywhere on Earth, and effective up to 10 or 15 meters. If you shoot someone in a limb, it paralyzes it for a few minutes. If you hit the head, it causes deafness and a headache and in most cases unconsciousness. Cops usually aim at the gut; that usually causes the target to lose his lunch at both ends, and it's hard to be macho with your pants full of shit."

"I can imagine. What if you hit somebody in the chest?"

"Knocks them down, knocks the breath out of them, but not much more—unless they have a *very* bad heart. Or so I'm told; I've never had to use mine, except against a simulator. Will I have to register this?"

"No, but do you mind if I tell Josh that you have it?"

"Feel free. It's meant as a deterrent; your embassy staff warned me about the lack of single women here, and advised me to take precautions."

"You should be safe enough here in town," said Aline, a little uncertainly. "You're the only single woman we've had here in five years, which is more than long enough for the single men to have forgotten their manners—those that had any to begin with—and I hope there won't be any trouble ... Of course, that's partly up to you, too."

"Uh-huh."

"Phil will work out the details of your job later, and deduct any expenses from your salary then. Earth money isn't worth anything

here; it's not as though there were much to buy, anyway. Food is rationed, liquor restricted, clothing ..." She shrugged. "You'll need something warm if you're planning on going outside at night, but for the rest ..." She looked at Laura's form-fitting sable-and-silver coverall. "Is that what they're wearing on Earth, nowadays?"

"This?" Laura smiled. "No, this is a shipsuit; there are little airtanks in the shoulder pads, the collar pulls up over your head to make a breathing mask, there are gloves in the pockets, you can set it to reflect heat or retain it ... it's not recommended for long-term occupancy, but I thought it'd protect me against the weather here."

"Oh," said Aline.

BENNETT LOOKED AT THE FILE ON HIS WRISTCOM, NODDING APPROVINGLY every few minutes. "Impressive resumé." Carmichael grunted. "I think she's going to be a great asset. I hope she likes teaching."

"You thinking of quitting?"

"I'm 56; I'd like to retire some day, and it'll be years before any of my students are ready to take over. None of them shows much promise—oh, a few might become competent technicians, but ..."

"What?"

"Even the best of my students just think of science as a ... a labor-saving device. A luxury. They're not interested in how it works, or how they might improve it, and if it breaks down, they'll ... they might just throw it away." Carmichael raised an eyebrow. "I want us to preserve more than just our genes, Phil. I want us to preserve our culture, European culture, the white man's culture, and science is part of that culture."

"It won't be forgotten," Carmichael said, reassuringly. "There'll always be the library ..."

"Are you sure? That's what we thought about the gene bank. Did you ever go to the old space museums in Houston or Florida?" he asked, before Carmichael could object to the argue. "No? They still have the computers there from the *Apollo* missions, the ones that planned the first mission to the Moon. Twenty, 30 years later, one generation, those computers were antiques, and the software they'd written for them was ... worthless. Not compatible with any computer then in operation, neither the language nor the recording medium. When they finally began sending ships to the Moon again, they had to write the software from scratch."

"Well, they probably would have had to do that anyway ... besides, that's only one example ..."

"Have you ever heard of bdelium?"

Carmichael hesitated, mentally running through the periodic table. "No. What is it?"

"Nobody knows. It's mentioned in the Old Testament, but all we know about it is that it's found in Havilah and is the same color as manna—but as nobody knows where Havilah was or what manna is, that's not very useful. You see, it's not enough that data is *recorded*, it has to be *understood*."

PREGNANT WOMEN

confined to a farm, and her husband's one of the guards.

"And you think this geneticist is going to make that much of a difference?" the Mayor asked, dubiously.

"I think she could, if we give her a chance. Hell, I'll step aside tomorrow, become her assistant, if that's what she wants."

LAURA LOOKED AROUND THE CONFERENCE ROOM AT THE PEOPLE GATHERED around the cloned oak table—Carmichael; van Neukirk; Wilkins; the Bennetts; and the Attorney General, Bob Thornbury—and smiled. "I've done a quick assessment of the situation here," she said. "The first thing that needs to be done is to design plants that the bison can eat and which can compete successfully with the lichen, despite the long cold nights. That should also make it easier to create strains of wheat and corn that require less maintenance—unless you think that public resistance to engineered crops is too great?"

"It shouldn't be," said Carmichael, "not if we can sell the seed for less, and promise a better yield for less work."

"Excellent. Now, as for my fee. As you know, I've been working for the past month on a lab assistant's salary while you've assessed my work. I'm happy to continue on that salary as long as one condition is met."

"Condition?" grunted Carmichael.

"Yes," she said, calmly, placing a data disk on the table. "I have here complete reports from the DA's office, the county coroner's office, and the homicide branch of the Philadelphia Police Service. I demand the immediate arrest and subsequent trial of Adam Bennett for the murder of Prof. Neil Rosen."

LOOK," SAID BENNETT, WEARILY, "I WASN'T the only one. You know you're never coming back to Earth and they can't exactly come and get you, you think of somebody you always wanted to kill, or something else you always wanted to do but didn't think you could get away with, all you have to do is make sure they don't have enough evidence, probable cause, before you're ready to leave Mars, and ... at least half of us must have done it." Carmichael looked at him without sympathy. "Well, half the men, anyhow." He poured himself another shot of Carmichael's whiskey. "OK, so

maybe *you're* too much of a straight arrow to even have thought of it, and OK, maybe most of us didn't go as far as murder, though I bet a lot did. I bet a lot played it safe by picking victims with no links to them at all, too, just some nonwhite who got in their way. I bet if you could read the news-tapes from the month before most of us lifted off for Mars, you'd find evidence of a lot more rape and murder than usual. Mind you, I bet the same thing happened before the colony ships left for Athene and Sappho and Utopia and ... what the fuck's the other one?"

"Tvashtri," muttered Carmichael.

"Yeah. That. Maybe not on the same scale, not as violent, more likely it was just em ... ember ... embers ..."

"Embezzlement?" suggested Carmichael, moving the whiskey bottle out of reach.

"Yeah. That. Probably how the ships were built in the first place, a bunch of hackers sucking a few trillion out of Social Security or the Swiss banks or Microsoft-Disney-McDonalds or whatever. But it's like knowing the world's going to end tomorrow, so what the fuck, right? Have as much fun as you can while you can ... OK, maybe *you* didn't think that way, but ... Jesus, Phil, why the fuck *did* you come here anyway?"

Carmichael put the bottle back in his desk drawer. "Earth was getting too crowded."

"I thought you lived in Montana?"

"Even Montana was getting too crowded," the mayor growled. "Not just too many people. Too many machines with too many eyes, too many laws and rules, too many ideas that didn't make any sense to me, too many decisions made by people who lived in cities and thought that everybody else either did or should. Me, I never liked cities, never wanted to live in one. Never even went to college; even the academy was too crowded."

Bennett nodded. "You should've seen Philadelphia. You couldn't get tenure unless you were black or Jewish or Asian or queer ..." He glared petulantly at his empty glass. Carmichael ignored him. "Hey, did you answer my question, or did I miss it?" Carmichael leaned back in his chair and stared at the paneled ceiling, idly wondering where Earth was. Probably somewhere under his chair, he thought; he could have asked the com, but he didn't care that much. "I just thought our best hope was to start again somewhere else, and there wasn't anywhere on Earth you could do that, and I didn't want to live the rest of my life in some bubble breathing air out of a can. If that's what other people want, fine, let them." He sighed. "Is that why you killed this Rosen?"

"Whuh?"

"The report says he flunked you, just over a year before the *Forrest* left."

"Yeah, he did, but that was just ... I was getting too friendly with one of his students, who he obviously had his eye on, and he said I harassed her. And he said I was fuh ... fudging my ev ... ev'dence for my thesis."

THEY'LL HAVE JUGGER

dragonslayers, razorgats, and other military weapons we

"What was your thesis about?"

"Genetics and intelligence," said Bennett, slowly and carefully, enunciating each syllable as though it were a poem. "He said my procedures showed bias—the sample and control groups, my choice of IQ tests ... that sort of thing," he trailed off, sulkily. "He was supposed to have proved how small the genetic differences between the races were, and I guess he didn't like me proving him wrong. What're we going to do about this?"

"Keep you off the stand, if at all possible," said Carmichael, sourly. "It probably won't be."

"What? Why?"

"Because you can't bluff to save your life—which is what this may come down to," Bennett glowered. "How long've we been playing poker? And how much have Piet and I taken you for in that time? Everyone who was in that meeting knows you're guilty; they saw it on your face as soon as Strong mentioned Rosen's name." He blinked. "What was the name of this student?"

"Huh?"

"The one Rosen accused you of harassing?"

"Jesus, Phil, it was more'n 30 years ago ... Crystal? Christy? Something like that."

"Surname?"

"Stone. Or Storm. Smith, maybe—something very ordinary, short, one sylla ... syllable. And I think it began with an 'ess.' Why?"

"Could it have been Strong?"

"Yeah, I guess ... oh. You think this Dr. Strong is her daughter or something?" He thought about it for a moment. "She looks a bit like I remember Christy looking ... blonde, tall ... don't know whether she had a kid, though. What does the file from the embassy say about her parents?"

Carmichael asked his secretary to show him the files. "Mother, Christina Strong, white; father, Gordon Platt, also white. Geneprints on record—you might want to check these out tomorrow, after you sober up." Bennett grunted. "Says they were divorced when Laura was just under two years old. Nothing in here about a Neil Rosen."

"What difference does it make?"

"None, I guess. Just wondering why she came all this way some 30 years later; it's not the sort of thing you do for a complete stranger. Besides, if what you say is true, you wouldn't be the only one here who's wanted back on Earth ..."

Bennett's only answer was a low, rattling snore. Carmichael glanced at him, considered trying to carry him home, then checked the thermostat in the office and left him in the chair to sleep it off.

Carmichael was wakened the next morning by a com call from Thornbury, who didn't waste any time with preliminaries. His voice was sharp enough that his usual Georgia drawl had disappeared. "What're we going to do about this shit, Phil?"

"Fuck, I don't know. Can you let me get some coffee, first? I left Ben passed out in my office."

"OK. Call me back in five minutes."

Carmichael's home was no larger than Laura's, a standard one-family dwelling, and the kitchen contained nothing but a small fridge and a coffee machine. After his wife had died in childbirth, eight years before, he'd asked to be moved into the single men's dorms, but Mayor Burgess had considered this beneath the dignity of the Sheriff's office. Carmichael had made the most of it by using the spare rooms occasionally as a drunk tank, women's refuge, and safe house for witnesses. Since being elected Mayor, he'd raised the subject only once, but the citizen's council had reacted with horror. He made a point, however, of eating in the canteen at least twice a day, available to anyone who wanted to talk—hence the minimal kitchen, not that he'd ever learned to cook. He donned an ancient yellowing bathrobe, made himself a large mug of coffee, sat down in his favorite chair, and called Thornbury. "Well?"

"I've just called a meeting of the faculty heads," said the lawyer. "They've checked out Strong's models for our population growth, and they can't find any flaw. Bennett is free to try, if he likes, but I think she's right ..."

"Right about what?" asked Carmichael.

"Without some major modifications to our birthrate, we're not going to get the population up much past five thousand in the next five years—and even if we do, we're still going to need to improve our food production to match. And it has to be done *soon*; even allowing for coldsleep slowing down the aging process, most of our women are close to 40 or past it, and the deathrate among the men is getting scary."

"Can we keep the population steady?"

"Maybe, but that won't be enough for Earth. With return trips possible, a *lot* more folks are willing to take chances on settling outer worlds, and this one's just about ideal. They're not going to let us keep all of it for just five thousand people. We'll get to keep New Virginia, maybe, and the farms, maybe as far away as the sea, but not much more than that. Now, *maybe* if we can get the population up to eight or nine thousand, Earth will let us restrict immigration to whites only, but even that has problems. We'd have to agree to let anybody who wants to leave here go, and at present, I wouldn't bet on enough women staying to keep the population up. This is just going to get worse if we start putting them on fertility drugs and turning them into baby machines, even if it is for the public good. It may take more than just an appeal to their patriotism."

"Like what?"

"Fucked if I know, but it's all academic if we don't let this Strong woman do her voodoo on the crops, and she won't do that unless we hang Bennett out to dry. Now if it was up to me I'd shoot the stupid son of a bitch myself ... but it's not."

Carmichael sipped at his coffee to hide his expression. Thornbury had been a law clerk in his father's firm back in Georgia, and was rumored to have signed aboard the *Forrest* to escape from his family. It was no secret on Ivory that generations of Thornbury men had

MAIDS, BATTLESUITS,

haven't even heard of yet. Nanoclouds. Bioweapons.

practiced lynch law when other courts had been unsympathetic. "You'll be prosecuting him?"

"Have you seen the evidence?"

"Glanced at it."

"Read it. We both know he's guilty, Phil, but this *proves* it."

Carmichael shrugged. "I'm not the Sheriff any more. It's nothing to do with me. Talk to Josh."

"I did. He needs to hear it from you; he still thinks he's your Deputy."

Carmichael took another slow sip of his coffee, then nodded. "I'll call him."

"Thanks. While you're at it, ask him to guarantee protection for Dr. Strong. Off the record, Phil, I need to know you're with me on this. If you're not, all the evidence in the world—both worlds—isn't going to help."

Carmichael considered this. "Do you trust her?"

"Strong? I trust her to act in her own perceived best interests; that's as far as I trust most people. I trust the judge and jury to do the same—my job is to make sure they perceive those interests the same way we do."

"What do you think she's interested in?"

"Making a name for herself, most likely. She comes here and saves the world, and she becomes famous, but she doesn't want to share the glory with anybody else, so Bennett has to go."

"That sounds a bit ruthless."

"She wants him extradited, not executed; they don't do that on Earth anymore. I'm not sure Kurtz will go for that; it sets a dangerous precedent. Look, you're his friend, and like you say, you're not involved; tell him to plead to manslaughter, and we can send him out to a farm with Burgess and the others. I think Strong'll settle for that."

"I think it goes deeper than that," said Carmichael. "I think Ben knew her mother; Rosen was their teacher."

"Interesting. I thought it might be her mother she was competing with; she's a professor of Genetic Engineering at MIT. But that's by the by. If it's a choice between giving up Adam Bennett and losing a war, I know which way I'll go."

"War?"

"Of course. What do you think's going to happen if Earth decides to give parts of the planet to nonwhites? Do you think they'll expect us to welcome them with open arms? Fuck, no! They'll make sure they're armed, and not just with shotguns and tanglers. They'll probably have juggernauts, battlesuits, dragonslayers, razorgats, and other military weapons we haven't even heard of yet. Nanoclouds. Bioweapons. What's so funny?"

"Not funny, just ... ironic," said Carmichael. "Thinking about the white man's burden. This time, we're going to be the natives, them the invaders with the superior technology."

Thornbury stared at him, then shrugged. "Even if we avoid a war, what'll happen when hundreds, maybe thousands, of young women

land on the planet, single women, who didn't have to travel 17 years to get here? Black women. Asian women. How easy do you think it'll be to keep our genetic purity then?"

Carmichael looked at him over the edge of his coffee cup. "What're you wanted for, back on Earth?"

Thornbury showed his teeth. "Just tell Bennett that if he admits to manslaughter, I won't ask for a com scan to see whether he's lying. Not that I need one; he can't open his mouth without his guts falling out. Tell him it's a farm or a firing squad—no, tell him that if he doesn't plead, I'll send a copy of the case files to his wife."

Carmichael drank the dregs of his coffee, and decided not to ask what *that* threat meant. "Bob, has anybody ever astonished you by acting on principle?"

"I'm acting on principle," said the lawyer, blandly. "I'm doing what's best for the white race—which is also what's best for me. And the only time anybody's astonished me is when we saw their self-interest differently. Just tell Bennett, OK?"

WHAT DO YOU MEAN, YOU'RE GOING TO PLEAD?"

Bennett shuddered. "Can you keep your voice down? The kids will hear."

Aline Bennett scowled at him, then rolled over to face the spraystone wall. Their home was another standard family apartment, with two sons in one bedroom, a daughter in the other, and while it was well sound-proofed, Aline tended to project even when out of court. "It *was* manslaughter, by Ivorian law," said Bennett, softly. "On Earth, simply carrying a gun into somebody else's home made it—"

"You don't have to teach me law," snapped Aline.

"Sorry." He kissed the back of her neck; she flinched away. "Phil thinks that Strong will accept that, and it's better than extradition ..."

"Meanwhile, your children are left without a father."

"I'll be back as soon as Strong has left for ... wherever it is she's going next. Nobody expects her to stay for more than a year or two. And she's got them convinced that she can solve the food problems ..."

"Do you believe her?"

"I don't *trust* her, but yeah, I think she can do it, even if it's just to show everybody how fucking clever she is. Even if I didn't, she's got the medtechs and the other deans convinced that she can do it, and it's pretty obvious that I can't. So they want her to stay here until she's taken care of our problems, then we build a nice statue of her and she fucks off back to Earth and everybody lives happily ever after."

"And what if it takes more than a year or two?"

"It shouldn't, and she won't want to stay here that long. She's not really one of us."

Aline rolled over suddenly until they were nose to nose. "Is it possible that she's not white?"

"What?"

WHEN THE OTHER

lumbering toward her, Laura blasted him in the stomach.

"You said she wasn't one of us. Could she have engineered her genes so that she *appears* white?"

Bennett blinked, then shook his head gently. "It could be done, but the embassy would have checked her gene scan against her parents' ... I can double-check tomorrow, but I don't think it's likely. I never knew her father, but her mother was ... I'll check tomorrow. At least they haven't kicked me out of the lab yet."

"What if a rumor were to go around that she *isn't* white? We already have a Jewish victim, that might not be enough to guarantee a victory by itself, not if what Thornbury tells me about the forensic evidence is true, but if we can discredit *her* ..."

"And what if they find me guilty?"

"We appeal," she replied, promptly. "If you plead, you're stuck on a farm, or worse, until Strong leaves. But if we can drag this case out until the *Ulysses* has come and gone, then she'll want to stay to see how it comes out. How did you know her mother?"

"What?"

"You said you knew her mother. Where from?"

"College," he replied. "Why?"

"How well did you know her?"

"Not very. I asked her out a few times, but I guess she was busy sleeping with her tutors."

Aline propped herself up on one elbow. "She was sleeping with Rosen?"

"I don't know. Maybe."

"Adam ..."

"I *don't* know!"

"It could be helpful at the trial." He groaned softly, waiting. "Is that why you killed him?"

He drew a deep breath. "Honey ..." It was too late; she'd already done the necessary arithmetic. "This was after we were married, wasn't it?"

"Yes. You were already on your way to Mars."

She scowled, and rolled over, and they lay there back to back for a few minutes. "It's still worth asking her," said Aline. "In court. Even if she says no, the implication will still hurt her."

CARMICHAEL LOOKED AROUND HIS OFFICE AND SIGHED INAUDIBLY. "OK. I asked you both to come here without your lawyers in the hope that we might work something out. Dr. Strong, if Mr. Bennett pleads guilty to manslaughter, will that satisfy you?" The geneticist shook her head. "There'll still be a sentencing hearing, you'll get your hour in court, we're not going to hush anything up—"

"No."

Bennett rolled his eyes. "You'll destroy everything I have either way," he said, before Carmichael could interrupt. "My marriage, my family, my job ... what else do you want?"

"What else do I *want*?" she asked, frigidly. "I want justice. You came to my mother's home, armed with a silenced pistol, and when you

found Neil there, you shot and killed him."

"I didn't know he was going to be there!"

Carmichael raised his eyebrows at that. "Then why the pistol?" asked Laura. "Who *were* you planning to murder?"

"Nobody!"

"Then why carry a gun? A *silenced* gun? Were you planning to kill my mother? The only other one home was me."

"I wasn't going to kill her! Just—" A second too late, he shut up.

"Just?"

Bennett, his face red, turned to Carmichael. "Phil ..."

"Just what?"

Carmichael let out his breath in a long sigh, then drew it in again. "Dr. Strong, if you're not going to accept a plea of manslaughter, this meeting—"

"Just scare her?" Laura hissed to Bennett. "Just threaten her? Why?"

"He'll be tried under the laws of this world," said Carmichael, wearily. "Carrying a gun, even an illegal one, doesn't count as premeditation here."

Laura glanced at him. "Under the laws of your world, what's the penalty for adultery?"

"Minimum is confinement to an all-male work community for a minimum of 12 local years," replied Carmichael. "Maximum is death by hanging or firing squad. Are you saying—"

"It's not true," blustered Bennett. "I never—"

"No," said Laura. "I believe you." She turned to Carmichael. "What about rape?"

"Death," replied Carmichael, flatly, "but it's also damn difficult to prove."

"I didn't rape her either," whined Bennett. "Phil, you have to believe me—"

"It was the night before you had to catch the shuttle to Midgard," said Laura. "You came to my mother's house, with a gun, intending to rape her. Who were you going to threaten to shoot? Her? Or me?"

Carmichael stared at his old friend, and shook his head. "This meeting is over."

"Rosen was just there as my babysitter," Laura continued. "Mum wasn't sleeping with him, he was 20 years older than she was, but he was kinder to me than my own father, and as a human being and a scientist he was worth more of you than—"

"ENOUGH!" yelled Carmichael, then, softly, "You've made your point, Doctor."

"You want me to agree to a manslaughter plea?" Laura snapped. "OK, I will, on one condition. He takes a com scan and swears that he didn't come to my mother's home to commit a crime, and that he's sorry that he killed Rosen. If I believe that he *knows* what he did by killing him, whether he meant to or not, and is genuinely sorry, not for his own sake but because Rosen didn't deserve to die like that ..."

SKINHEAD BEGAN

He staggered forward, then dropped to his knees and threw up.

Carmichael watched as the tears streamed down her face, and nodded. "Can you please leave us?" Strong glared at him through her tears, then nodded stiffly and walked out. Carmichael winced slightly as the door slammed behind her, then turned to Bennett. "I guess there's no point asking you to take that scan?" Bennett shook his head. "Right. Well, you just sit there for a few minutes. I'm going to give her time to get home, then I'm going to call Thornbury and tell him to have you charged with murder, and you're going to get out of my sight. Either Aline will find a way to get you off or she won't, but if this story gets out, it won't be safe sending you to any of the farms."

"Phil ..."

Carmichael shook his head. "I don't want to hear it. I still don't trust her, but I don't need a com scan to know she was telling the truth."

"It was 35 years ago! She was maybe four years old! All she remembers is what her mother told her, and she wasn't even there—"

"And you still can't bluff to save your life," said Carmichael, sadly. "You're under house arrest—and don't say I don't have the authority, because it'll only take me two seconds to tell every deputy in town to shoot you on sight. Now get out of here."

MADELON RAN TO THE *ULYSSES*'S BRIDGE AS SOON AS THE wormhole closed behind them. Bakar, the coms officer, smiled thinly as she came in. "Expecting a call from Ivory?"

Madelon stared at the ship's emblem on the wall, silently reading the inscription below it: *To strive, to seek, to find, and not to yield.* "Just the news," she muttered.

"I'll patch a feed through to your cabin, and call you if we need the shuttle," he promised, "but do you think they'll let her go, even if she wants to? Quite apart from her skills, they need women, and she was attractive, if you like 'em short." He stretched; at two point four meters, Bakar was lanky even by Martian standards, and usually seemed cramped, except when in free-fall. "She might even be running the place by now."

THE JURY REACHED A VERDICT SIX DAYS AFTER THE *ULYSSES* HAD LEFT the system, and Laura was walking from the courthouse to her quarters, still feeling as though she'd been hit by a truck. Thornbury had been apologetic. "I didn't think they could reject the forensic evidence," he said, "but Aline won the case while it was still in *voir dire*."

Laura nodded. "She picked a jury that wouldn't convict a white man for killing a Jew, no matter what the evidence."

"I knew she'd try that, but I'm only allowed to reject so many ... it would've helped if the judge hadn't been against us, too, but there's a rumor that he's thinking of running for Mayor next election ..." He shrugged. "Phil doesn't want the job anyway. I was going to run

myself, but it'd be a waste of time now; *Bennett* would probably get more votes than I would."

"Even though everybody knows he's guilty?"

"I didn't say he'd *win*," said Thornbury, drily. "Look, you wanted a fair trial, and I did the best I could. I guess we'd both better get on with our jobs."

A block from her apartment, Laura looked up and focused as she noticed two men standing between her and the door. Both looked to be about 40, their heads shaved, their arms tattooed; both carried baseball bats, and wore heavy boots. Laura sighed softly, reached into the pocket of her overcoat, and kept walking toward them. She was barely three meters away before one of them spoke.

"You thought you could come here from Earth and order us around, didn't you?"

"No," she said, politely. "That's not what I thought. Now excuse me, please."

"Sorry," said the taller of the two. "You can't get in until you've paid your rent." The other laughed. Laura drew the quaker out of her pocket, and said, a little more forcibly, "Excuse me, please, you're in my way."

"This is our planet, bitch," said the taller, "and we don't take orders from you." The other looked a little nervously at the pistol, but the taller stepped forward and raised his bat. Laura shot at his shoulder, but misjudged slightly, and the blast of sound hit him in the face. He stepped back, startled, almost falling over his partner. His partner pushed him forward, and he reeled toward Laura, the bat still held high. She shot him in the leg before stepping aside, and he fell face down. She jumped back out of the reach of the swinging bat, and when the other skinhead began lumbering toward her, blasted him in the stomach. He staggered forward, then dropped to his knees and threw up over his partner. She smiled, and walked around them to her door, which she locked behind her.

Wilkins called it protective custody, rather than house arrest, but it amounted to the same thing; even the location tracker she wore on her ankle was said to be for her own safety. She had meals delivered to the lab, or to her apartment, and went nowhere else except occasionally to the farms. Wilkins deputized two women to serve as her guards, armed them with shotguns and tangle pistols, and allowed her to keep the quaker. "Just as a matter of interest," he asked, one day, "how many shots does that have charge for?"

"If I'm attacked by the rest of the baseball team, I'll start to worry."

"Gotcha." In fact, there were no more attacks, and she later heard that the two aging skinheads had voluntarily moved to a fishing village. She threw herself into her work, her only other recreation being chess against the computer or van Neukirk—and that, because of security, had to be over a com line. The 81-year-old astronomer seemed to be in a perpetually bad mood; none of the teenage students showed any interest in astronomy, and though he was nominally director of education, he'd been stuck with many of Bennett's

I WANT HIM TO SUFFER

And on rare occasions, I'd like everybody here who

lower school science and math classes. "You know they've got him, uh, reviewing your work?" he asked, holding out his fists. She pointed at the left; he opened his hand to show the black pawn. "Which means he'll probably take credit for it after you've, uh, gone. Those who can, do; those who can't, pretend they understand."

"How do you always do that?" she said, as he moved his Queen pawn and hit the time clock. Only at speed chess did she have any chance of beating him.

"Do what?"

"I almost always get black."

"If you didn't, you might win more often, and that'd be bad for my ego. You're the only one here who respects me as it is."

"Carmichael respects you. That's why he won't play poker with you any more."

"Phil's a good man," said van Neukirk, with a small smile. "A little gullible, tends to trust the wrong people sometimes, but he's honest, reliable, not an opportunist, and hasn't an atom of hatred in his body. He came here because he thought it would be a better life for himself and his family, who, uh, unfortunately didn't make it, so he's tried to treat the whole population as his extended family, which, uh, can't be easy."

"What about you?"

"Oh, I never liked my family much anyway."

"I mean, why did you come here?"

"A chance to do observational astronomy with no academic politics? Anyway, that's what I, uh, thought at the time. It's all routine work, but I've named 55 moons and asteroids and calculated the orbits of 41 comets since I came here, all of them approved by the, uh, IAU, and how many people can claim that sort of record? Check." Laura stared at the board, sighed inaudibly, and sacrificed a pawn. "What are you going to, uh, do about Bennett?"

"What?" She looked up, startled.

"You came all this way hoping for justice, and you don't strike me as the sort who gives up easily. Don't worry, I won't, uh, warn him or anything."

"What can I do? Your justice system here has cleared—" van Neukirk snorted. "OK, so we all know it wasn't justice. What do you expect me to do?"

"What do you *want* to do?"

"That depends how bad a mood I'm in," she said, lightly. "Most of the time I just want him to understand what he did by killing Uncle Neil, what he took from the world. Other times I want him to suffer, maybe even to die. And on rare occasions, I'd like everybody here who decided that race was more important than justice to pay. Check. Mate in three moves."

Van Neukirk blinked. "Should I plead for mercy now?"

"Mercy? It's only a game."

The astronomer shook his head. "We both know better than that," he said.

Laura looked around at her audience, which consisted of the Citizen's Council, the teaching staff of the University of New Virginia, and a few journalists. She didn't see anyone who looked like a farmer or grazier, and gathered that the Council wanted to control the timing of her announcement, probably to coincide with the elections. She glanced at Carmichael, who nodded briefly. "As you can see," she began, "the Faculty of Genetics has succeeded in producing two new strains of grass in an attempt to deal with the food shortages slowing down human population growth on Ivory. This," she indicated the long, jointed grass stalks in the tray to her right, "has been engineered from bamboo, with genes from several other plants, to produce a fast-growing cold-resistant grass intended as animal fodder. Given sufficient moisture, this grass can grow at the rate of 25 to 27 centimeters per day—that's up to 10-and-a-half inches. It flowers when it gets to between one and two meters in height, and is soft enough for all of your grazing animals to eat it; it can even be mowed and used as hay. We have bison, deer, and antelope in the zoo that have been eating it happily for weeks now. It grows well in the shade of your conifers, and the roots will survive the coldest winter nights. If you'll examine the roots, you'll notice that we've incorporated alfalfa genes to give the plant root nodules containing nitrogen-fixing symbiotic bacteria, to create better farmland.

"This plant is a new strain of arctic wheat from Earth, engineered to survive the nights and give you a good crop every Ivorian year. It also has root nodules, but fewer of them. Unlike the other grass, it won't grow wild, but you won't need to grow it in greenhouses, either, so you'll be able to use them for fruit and green vegetables, and cut back on the vitamin supplements. The wheat also makes a pretty good beer," she added, drily, "which *has* to be an improvement on the local hooch.

"Are there any questions?"

IT WAS LATE ON A MILD SPRING DAY AND LAURA WAS SITTING IN HER apartment, playing chess against the com while Sue Wilkins, one of her bodyguards, knitted a baby jacket. She'd just sacrificed a knight to save her queen when a hologram of Carmichael's weatherbeaten face appeared above the board. "Dr. Strong? I'm on my way to the

MAYBE EVEN TO DIE.

decided that race was more important than justice to pay.

hospital; Piet has broken his hip." She was already out of her chair before he said, "He's asked to see you."

"I'll be right there, but there's not a lot I can do. I'm a medical doctor, but I was never much of a surgeon—"

Carmichael shook his head. "I don't think there's anything anybody can do."

"How did it happen?"

"He had a heart attack while climbing the stairs at the observatory, and fell. The prognosis isn't good; he's had attacks before, but he's kept working."

"You don't exactly encourage people to retire here," said Laura, drily.

Carmichael grimaced. "I can pick you up, if you'd like an escort through the bureaucracy."

"Please." He arrived a few minutes later, wearing his Sheriff's uniform; despite the bad news, he looked more relaxed than he had before the election. "Piet doesn't *have* to work the hours he does," he said defensively, as they walked toward the hospital.

"You think somebody else is going to run the observatory?"

"Nah, I guess not, but he won't be able to, for a while at least."

"Well, *that* should do wonders for his will to live," Carmichael glared at her. "He'll still have to teach, won't he? I know, I know, you can't spare the food for adults who aren't seen as contributing, and how many Ivorians see astronomy as necessary? Look, let him move in with me; I can afford to feed him. The new wheat crop will be ready for harvest in a few weeks—"

"It'd be against the law." She looked blank. "A man and a woman living together. But you're right; he can't stay out at the observatory alone. I have spare rooms—"

"I'm an MD! I can look after him!"

"That's not enough. And even if I was prepared to make an exception, the Mayor can go through the Attorney-General, and Thornbury isn't going to come running to your aid again." Laura accepted that with a barely visible shrug; the new Mayor, Duplessis, had been the judge at Bennett's trial. "Besides, the mayor wants you to eat the new wheat for a season before he lets anybody else near it, except for the lifers at the work farms—he'd be glad to see them dead."

"Does he really think I'd poison the whole settlement?" She sounded more amused than outraged.

"Probably not, but he doesn't trust you, either. Hell, I'm not sure I do." She looked hurt, and he sighed, leaned up against the wall, and looked up and down the alley to make sure no one was in earshot. "You came all this way to get justice for a member of your family—OK, he wasn't your blood, but I know you think of him as family anyway. I understand that. You didn't get justice—you know it, I know it, the Mayor knows it, most of us know it—and now you're not just pissed at Bennett, you're pissed at everybody who denied you justice, which is pretty much all of us. Now, you don't strike me as the type to take that sort of shit without doing something, and I don't necessarily have a problem with that. I just want you to swear to me that

you haven't done anything that will harm innocent people—and our kids are innocent, even if you don't believe the rest of us could be—"

Laura raised her hand. "I swear. I'll take a com scan, if you insist. It's one of the first things they teach you when you study medicine—*First, do no harm.*"

Carmichael looked at her suspiciously, then nodded. "There's no contraceptive or anything like that in the grain?"

"No contraceptive, no poison; as I promised, the extra food will make it easier to increase your population, not more difficult. You can feed it to the pregnant women in your farms perfectly safely, and I'll eat it for every meal until I leave here, if that's what you want."

Carmichael was silent for a moment. "The Mayor doesn't want to let you leave. He thinks you can be useful to him, if only as a sacrificial goat. I want you out of here, and I'm prepared to live with the consequences of helping you escape, if that's what it takes."

"Thank you."

"Don't thank me yet. Sure, I respect your reasons for coming here, what you've done and what you've tried to do, but mostly I think you're too dangerous to keep around. Just by being alive, you're a symbol—and before you reach for that little noisemaker of yours, you'd be an even bigger symbol dead. Most folks here don't much care that Bennett murdered Rosen, but they know he set out to rape your mother, a white woman, by holding a gun on either you or her, and they're pissed that he got away with *that*. We had a petition, a few days before the election; more than 1,600 parents insisting Bennett be removed from all teaching duties and any contact with children other than his own. That's the main reason Piet's been doing so much of his work. You and Bennett have—what's the fucking word?—polarized folks around here, and just like the last time we had offworlders here, we have mostly women on one side—your side—and mostly men on the other. That means more domestics, more separations, more work for me, and a lower birthrate. As far as I'm concerned, the sooner you leave, the better, and anything I can do to help, I will. Fortunately, I can trust all my deputies to back me up—I hope." He grimaced. "OK, let's go."

The next time she saw Carmichael was at van Neukirk's funeral; the time after that, when he arrived unexpectedly at her door while she was asleep. Sue Wilkins stumbled to the door, wrapping a robe around her bulging belly without letting go her stunchub. "Phil?" she said, staring at the image from the security camera.

"Yeah. We've just received a transmission from the *Ulysses*; I didn't call in case somebody's monitoring the com. Josh has gone to get a tilter, but we've got to go *now*, before the Mayor catches on."

She opened the door to admit Carmichael, then waddled quickly into Laura's room to wake her. "It's obvious *you've* never had kids," she muttered, as the geneticist slowly emerged from sleep. She threw her shipsuit and a bison-hide coat onto the bed, it being early winter and a few hours before dawn. Laura rubbed her eyes. "Whuh?"

"Rise and shine, sweetheart. The cavalry's here. Is there anything you need to take?"

THE BLAST OF BUCKSHOT

The next thing he saw was Laura bending over him, her hood

Laura, suddenly alert, climbed out of bed and grabbed her bag. "I need my com; the rest can stay here." She picked up her quaker. "Do you want this?"

Her bodyguard shrugged. "Hold on to it until we get out of here."

"You're coming with me?"

"If they're taking Josh to a farm, I'm going with him," she replied, firmly.

"What about your kids?"

"Pauline's 16; the others can stay with her or with us, whichever they like. Come on, girl."

WERE GOING TO HANSON ISLAND," EXPLAINED Carmichael, when they were airborne. "The old landing sight is belly-deep in your new grass, and this thing makes a piss-poor lawnmower, though you wouldn't know it from the way Josh flies." Sue smiled. "I'm not sure how well a shuttle would cope with the long grass either. The island's just big and flat enough for a landing strip, so we decided not to seed it. The wind will get pretty fierce after the sun comes up, but I think we can cope; still, if anybody feels like praying, it couldn't hurt."

"Will Duplessis know we're headed here?" asked

Laura.

"He might guess, but we have a good head start, and it'll take them a few minutes to find a tilter that's fuelled and ready. I left a compression program running at the observatory, so they won't be able to communicate with any of the weather satellites for a couple of hours, and if they try to stop the program, it'll take them even longer to reboot. You can thank Piet for that; he spent his last few days teaching me how to bollix the system."

They flew along in silence for several minutes, heading into the rising sun, until they saw the island on the horizon. "When will the shuttle land?" asked Laura.

"About 20 minutes after we do, if she can do it on the first attempt, and she probably can. I don't want to broadcast our location, so I've asked her to keep communications to a minimum."

"Then you might as well just leave me there and fly back."

Carmichael shook his head. "Not yet; there's still a shitload of things that can go wrong, and you're not going to last long stranded on that rock. We'll stay until the shuttle's down."

"Uh, Chief ..." called Wilkins.

"Yeah?"

"I think we've picked up a tail—fuck, lost it again. Just a sec ... there it is. Just at the edge of sensor range, and moving too fast to be a boat. Speed and bearing match ours."

Carmichael swore, and clambered into the co-pilot's seat. "That was quick. Who the hell would know we were coming here?"

"Bennett," suggested Laura. "He supervised the seeding, he would've known about the island ..." The Sheriff digested this, and

nodded. "Drop me on the island, and fly back. I'll be much less obvious than the tilter ..."

"You'll also be a sitting duck," growled Carmichael. His eyes scanned the passenger bay. Two shotguns, three tangler pistols, and a quaker. "OK, to hell with radio silence. Let's see how much time we've got."

ACCORDING TO THE RANGEFINDERS ON CARMICHAEL'S NOX AND THE tilter's sensors, Bennett's tilter landed 231 meters away from them, well out of effective range of their weapons. Carmichael watched through his nox, set to infrared, as the tilter door opened. "Just him and the pilot, like he said—oh, shit. Rocket pistol, and a shotgun." He looked at the clock readout in the nox; at least 11 minutes before the shuttle landed. "OK, both of you, other side of the tilter."

"What about you?" asked Laura.

"I'm staying put and talking to him. If he tries firing a heatseeker, he'll just hit the tilter; we'll be stranded here, but at least it won't explode or any of that shit."

She stared at the tilter. The sky was just light enough to make out the silhouette, though she couldn't pick out Bennett in front of it. "What if I try getting closer?"

"Are you crazy? He can pick you off as easy as—"

"I'm wearing a shipsuit. If I pull the mask down and breathe from the air tanks and set the insulation to maximum, I'll be all but invisible in infrared. If I can get into range for the quaker ..."

Sue Wilkins shook her head. "Can you fire a shotgun?"

"I don't know. I've fired a tangler ..."

Sue considered this, then handed her her tangler pistol. "OK. Best of luck."

"You can't be serious," growled Carmichael.

"Sure I am; it has twice the range of her popgun, and do you have any better ideas? You just keep him talking."

"What about the pilot? He'll be scanning the area, too ..."

"I'll keep my head down." Laura threw the buffalo-hide coat into the tilter, pulled the hood of her shipsuit over her face, adjusted the controls until it was a neutral gray barely distinguishable from the gray-green of the terraforming lichen, took the pistol from Sue Wilkins, followed her around to the far side of the tilter, then dropped to the ground and began crawling toward Bennett. Carmichael watched her, slightly stunned, then reached for his com. "Ben?"

"I'm here, Phil. You running out on us?"

"Me? Never. But I'm not going to force anybody to stay here against their will."

"You sure about that? How many people here do you think would like to go back to Earth, now they know how tough it is here?"

Carmichael glanced away from the tilter for a moment. There was a warm spot creeping away from him that might have been Laura Strong, but he wouldn't have sworn to it. "I don't know," he replied.

"Uh-huh. OK, some people we don't need, but some we do, and

HITTING HIM IN THE CHEST

open. It seemed to Bennett that nothing moved, for several hours.

Strong is one of them. What if this new grain of hers dies next season, or something?"

"Then I guess it's up to you to fix it," said Carmichael, slowly. "Hell, you've taken most of the credit for her work as it is." He didn't need the nox to know that Bennett's face had turned red.

"Maybe," Bennett said, after a moment's thought, "but if I didn't, how many people here would trust her enough to eat this new food?"

"I don't know."

Bennett nodded. "That was always your problem, Phil; it's why you washed out as Mayor. You can never see past the individual to the public good, the big picture. Take my trial. OK, I was guilty, but it was in the public interest to acquit me." Carmichael grunted. "Same with putting my name to Strong's work. Or were you just overwhelmed by those baby blue eyes and big white boobs?"

Without intending it, Carmichael looked away, looking for Laura. No sign of her.

"Phil? Just hand her over, and I'll take her back to town, and we'll forget this happened—say you were out checking on how the grass was growing, or something."

"And if I don't?"

A moment of silence. "Josh? You listening to this? Make him see sense, willya?" More silence, suddenly broken by a loud, distant *BWOOOM!*, making them all look around and up. The shuttle had slowed down to subsonic speed and was headed for the flat ground between the tilters. Bennett looked back toward the tilter, and saw Laura, barely visible in the early morning light, crawling furiously toward him. She raised her tangle pistol and fired, and the tangleweb splattered on the tilter beside him. He returned fire without aiming, but without enough body heat to lock onto, the rocket exploded a meter in front of her. Carmichael ran toward Bennett, shotgun at the ready. Bennett hesitated, wondering which of them to shoot next, and then the shuttle touched down a few hundred meters away, speeding toward where Laura was crouched on the lichen. Bennett fired just as she looked over at the shuttle and hit the ground, and the rocket passed over her back, missing by a few centimeters. Before he could aim again, the shuttle fired its braking jets, sending blasts of hot air across his field of vision. Bennett swore, holstered the rocket pistol, and shouldered his shotgun. The shuttle screamed to a halt in front of him, one wheel missing Laura by less than a meter. She lay there, staring up at the faintly glowing heat shield just out of reach. Bennett stared at the shuttle, then ran around to the far side, where he remembered seeing the hatch.

"Drop the gun! You're under arrest!"

He turned, startled, and saw Sue Wilkins standing about 30 meters away. He hesitated, and she fired, the blast of buckshot hitting him in the chest. The next thing he saw was Laura Strong bending over him, her hood open.

"Get a medkit," she said. Sue, behind her, merely stared. "I can save him, if you hurry!"

It seemed to Bennett that nothing moved, nothing happened, for

several hours, then he heard a vaguely familiar woman's voice say, "There's a kit in the shuttle. I'll get it."

LAURA HAD DISAPPEARED INTO HER TINY CABIN ALMOST AS SOON AS they'd left the waystation on Terre'Blanche. The crew let her stay there undisturbed for 48 hours, then Madelon called her over the com. She was concerned to find that Laura had covered the cameras before answering, but privacy is precious on a small ship, and after establishing that she had food and water, she left her alone for another 48 hours. After that, she stood outside the cabin, and insisted that she wasn't moving until Laura emerged or let her in. Six hours later, the door opened. Madelon stared at the olive-skinned, dark-eyed woman sitting on the bed. She had Laura's platinum hair, but with dark roots. "Well?" she asked, "are you coming in?"

The cabin was a little over two meters by two by one with everything folded into the walls, but Madelon squeezed inside and shut the door. "Laura?"

"Yes."

"Is this ... what happened? Are you ...?"

"I'm fine. It's just something I ate." She smiled. "I was lucky you arrived when you did; I made the incubation period a little too short and had to stay out of the sun, because the change is hastened by ultraviolet light. Some of the people on the prison farms who've been eating the same food I have must have changed by now as well; it should start to affect everyone else in a few weeks. You've read my reports?"

"Only the precis."

"So you know about the new crops and animal fodder I engineered?" Madelon nodded. "I created a self-replicating nano inside the nitrogen-fixing bacteria, which is passed on to whoever eats it, though it only affects humans."

"It changes genes?"

Laura laughed. "Nothing so drastic. It just causes increased melanin production; I'm going to be much darker than this by the time it stops in a few more days."

"Is it permanent?"

"No ... well, yes, if you don't reverse it, but it's easy to reverse. All you need is a lab and the know-how. Bennett could do it, if he knew Rosen's work—if they don't lynch him first, that is." She smiled thinly. "You see, he took all the credit for creating the new strains, so I suspect he'll find it hard to dodge the blame."

Madelon sat there silently, absorbing this. "Is that why you did this? Just so they'd lynch Bennett?"

She shrugged. "I'd prefer it if Bennett had some idea of what he'd done by murdering Rosen, but I can't make him learn—and I'm not responsible for what passes for justice on Ivory. Mind you," and her smile became a little wider, "if they don't find out how to reverse the procedure, I think they might have to change their immigration policy. Do you think they'll *still* want to bring in a few thousand white supremacists to boost their population? Personally, I doubt it." □

THE POETRY OF SCIENCE FICTION

*Science Fiction can tell you where it's going
simply by looking back at where it's been.*

BY BRUCE BOSTON

Against the fall of night,
across the wounded galaxies,
envoy to new worlds,
behold the man—he, she, and it!—
born into light, dying of the light,
becoming alien between worlds,
a new species more than human
always coming home
alone against tomorrow.

Time and again, those who can,
change the sky and all between.
We cast down the stars,
four hundred billion stars
on wings of song.
Brightness falls from the air,
downward to the Earth,

down the bright way
burning with a vision.
Earth abides, a swiftly tilting
planet in the ocean of night.

Explorers of the infinite, exiled
from Earth,
dancing at the edge of the world,
we call back yesterday
in memory still green.
We return to Earth
but we are not of the Earth.
The future took us out there
across the sea of suns
in search of forever,
beyond the blue event horizon
where time winds blow.

Lest darkness fall
you shall know them.
Strange relations. Strange
ports of call. Strange horizons
from utopia to nightmare.
Star-line velocities ten thousand
light years from home.
Men like gods. Women of wonder
holding your eight hands.
The shape of things to come.

The stars are ours—take back plenty!
Dream the creation of tomorrow!
Dream the last dangerous visions!

ADDENDUM: Except for changes in punctuation and capitalization, this poem is composed entirely from the titles of science fiction books and periodicals. *Across the Sea of Suns*, Gregory Benford, 1984. *Across the Wounded Galaxies*, Larry McCaffery et al., 1990. *Against the Fall of Night*, Arthur C. Clarke, 1949. *Alone Against Tomorrow*, Harlan Ellison, 1971. *Always Coming Home*, Ursula K. Le Guin, 1985. *And All Between*, Zeph Keatley Snyder, 1975. *Becoming Alien*, Rebecca Ore, 1987. *Behold the Man*, Michael Moorcock, 1969. *Between Worlds*, Garret Smith, 1929. *Beyond the Blue Event Horizon*, Frederik Pohl, 1977. *Born Into Light*, Paul Samuel Jacobs, 1988. *Brightness Falls From the Air*, James Tiptree, Jr., 1985. *Burning With a Vision* (SF poetry anthology), Robert Frazier (ed.), 1984. *But We Are Not of the Earth*, Jean E. Karl, 1981. *Call Back Yesterday*, James D. Forman, 1981. *Cast Down the Stars*, McClure Jones, 1978. *Change the Sky*, Margaret St. Clara, 1974. *The Creation Of Tomorrow*, Paul A. Carter, 1977. *Dancing At the Edge of the World*, Ursula K. Le Guin, 1989. *Down the Bright Way*, Robert Fleck, 1991. *Downward to the Earth*, Robert Silverberg, 1970. *Dream*, S. Fowler Wright, 1931. *Dying of the Light*, George R. R. Martin, 1977. *Earth Abides*, George R. Stewart, 1949. *Envoy to New Worlds*, Keith Laumer, 1963. *Exiled From Earth*, Ben Bova, 1971. *Explorers Of The Infinite*, Sam Moskowitz, 1953. *Four Hundred Billion Stars*, Paul J. McAuley, 1988. *From Utopia To Nightmare*, Chad Walsh, 1982. *The Future Took Us Out There*, David Severn, 1957. *He, She, and It*, Marge Piercy, 1991. *Holding Your Eight Hands*, (SF poetry anthology), Edward Lucie-Smith (ed.), 1969. *In Memory Still Green*, Isaac Asimov, 1974. *In the Ocean of Night*, Gregory Benford, 1979. *In Search Of Forever*, Rodney Matthews, 1985. *The Last Dangerous Visions*, Harlan Ellison (ed.), unpublished. *Lest Darkness Fall*, L. Sprague de Camp, 1941. *Men Like Gods*, H.G. Wells, 1923. *More Than Human*, Theodore Sturgeon, 1953. *A New Species*, Robin Roberts, 1993. *On Wings of Song*, Thomas M. Disch, 1973. *Return To Earth*, H.M. Hoover, 1980. *The Shape of Things To Come*, H.G. Wells, 1933. *StarLine* (Newsletter of the Science Fiction Poetry Association), various editors, 1978. *The Stars Are Ours*, Andre Norton, 1954. *Strange Horizons*, Sam Moskowitz, 1976. *Strange Ports of Call*, August Derleth (ed.), 1948. *Strange Relations*, Philip Jose Farmer, 1960. *A Swiftly Tilting Planet*, Madeleine L'Engle, 1978. *Take Back Plenty*, Colin Greenland, 1990. *Ten Thousand Light Years From Home*, James Tiptree, Jr., 1973. *Those Who Can*, Robin Scott Wilson (ed.), 1973. *Time and Again*, Jack Finney, 1970. *Velocities* (SF poetry magazine), Andrew Jones (ed.), 1982-1988. *We*, Eugene Zamiatin, 1924. *Where Time Winds Blow*, Robert Holdstock, 1981. *Women of Wonder*, Pamela Sargent (ed.), 1974. *You Shall Know Them*, Veronique (pseud. of Jean Brules), 1953.

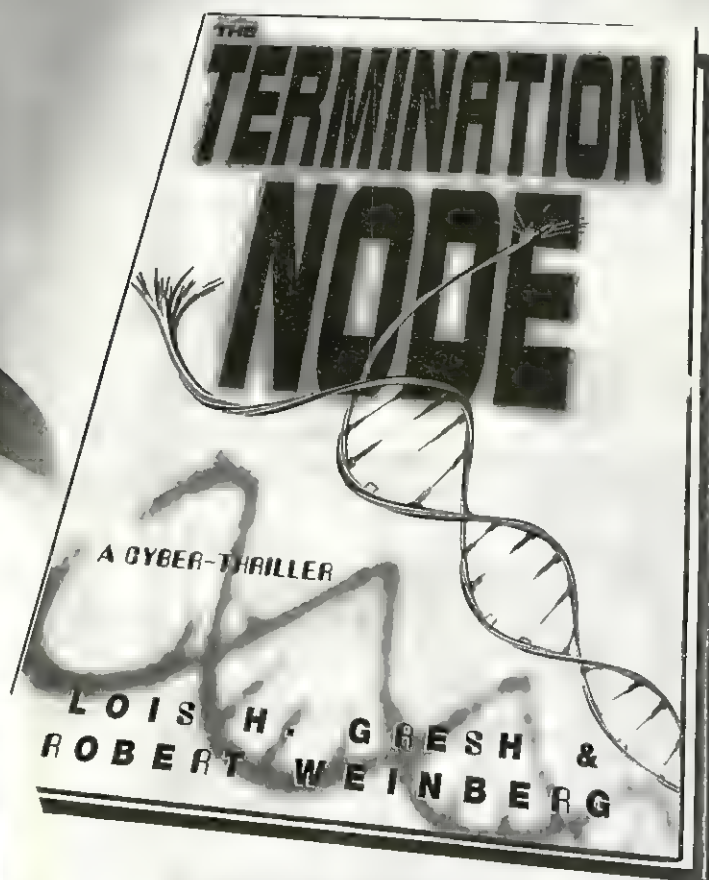
DEL REY PROFILE

NAMES: Lois H. Gresh & Robert Weinberg

STATS: *GRESH*...top computer expert, an independent consultant and cybersecurity specialist for major corporations—including Kodak, Xerox, Westinghouse, and Sperry, as well as the U.S. Department of Defense/Army/Navy—and an award-winning science fiction and suspense author, nominated six times for the Theodore Sturgeon and Bram Stoker Awards.

WEINBERG...is the Hugo, World Fantasy, and Balrog Award-nominated author of eighteen books of science fiction, horror, and suspense, editor of more than one hundred anthologies, former teacher of the popular Columbia College course "Writing Technothrillers," and a two-time winner of the World Fantasy Award.

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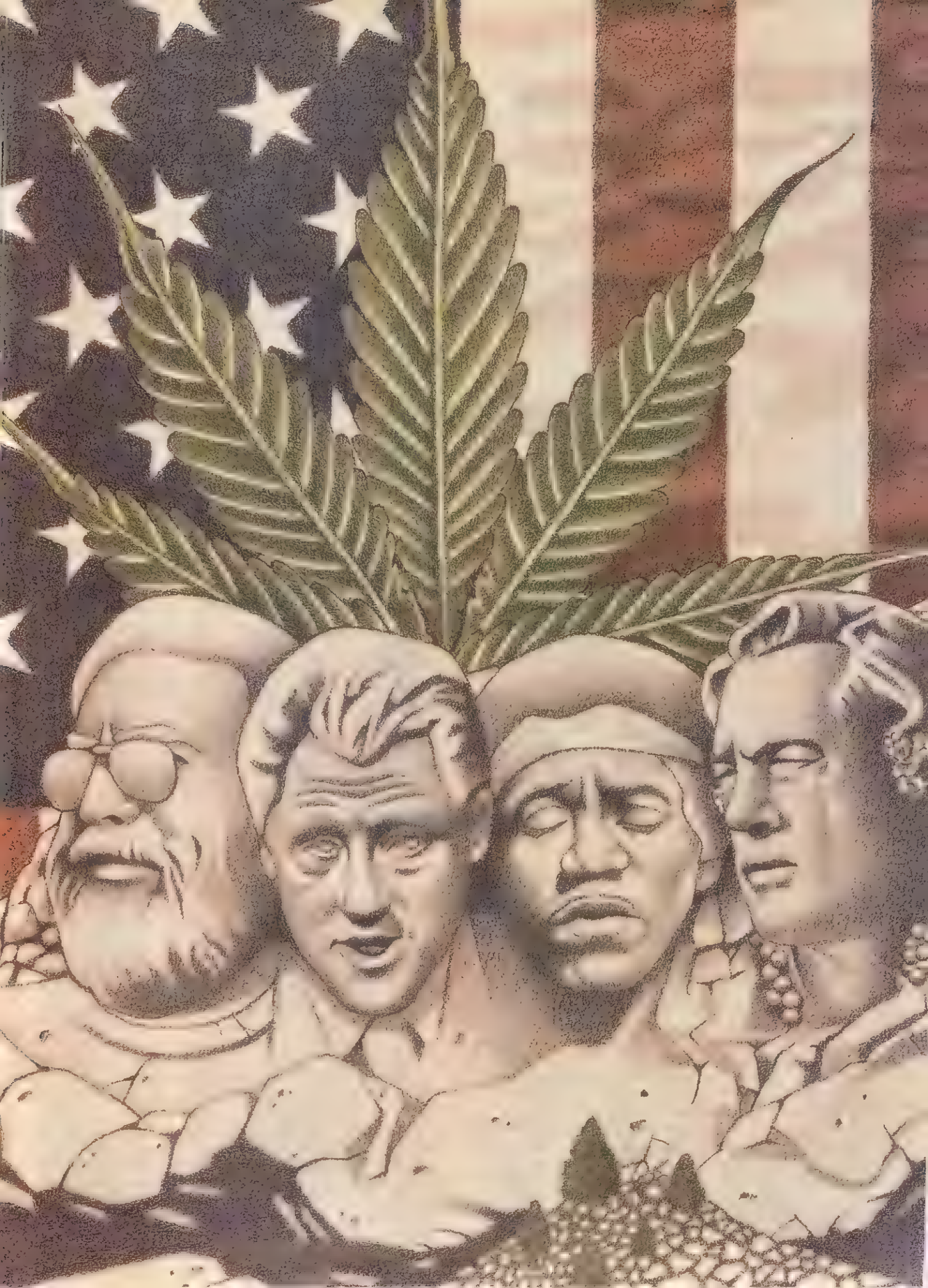


IN THE NIGHT OF JULY 26, 1979 A fire breaks out in a farm supply warehouse on the 100 block of 1st Avenue North in Nashville, Tennessee. Investigators will later determine that it started by accident; old copper wiring in the hundred-year-old building short-circuited and, in turn, ignited canvas stockpiled on the second floor. Whatever the reason, the warehouse goes up fast; the four-story building is filled with inflammable material, and by the time the first firetrucks arrive on the scene, flames are rushing through its sooty windows and licking its roof.

It's clear from the beginning that the warehouse is going to be lost; all the firefighters can do is contain the blaze and prevent it from spreading to adjacent buildings on the riverfront. Their job is made more difficult by

GREEN ACRES

BY
ALLEN
M. STEELE
*Illustration by
Chuck Demorat*



the weather conditions; the air is warm and humid, with prevailing winds coming from the southeast, so the smoke tends to billow out instead of going up. The firemen have donned oxygen masks, though, so they're largely unaffected by the fumes, but as the fire consumes everything within the warehouse, a dense brown fog wafts through the streets of downtown Nashville.

Only a block away is the vice strip commonly known as Lower Broad, an appropriate name since the street is lined with strip joints, porno theaters, and seedy bars. When firetrucks begin roaring down Broadway toward the river, the denizens of the Classic Cat, Deemun's Den, and Tootsie's Orchid Lounge get off their bar stools and wander out to see what the fuss was all about. Upon seeing that a warehouse down on the Cumberland was going up in flames, some of these drinkers, hookers, and three-time losers saunter down the street to watch the show, while others simply take their beers out onto the sidewalk. It's a slow Wednesday night and there's nothing much else to do; although Lower Broad is filled with smoke, some of these upstanding citizens notice that it smells kinda good. . .

What happens next will be reported by newspapers across the world and make its way into the national folklore. Within an hour of the arrival of the first firetrucks, Lower Broad becomes the scene of a spontaneous block party. All of a sudden, people start acting up; from the most stoical bouncer to the most sour whore, big loopy grins spread across everyone's faces. A 20-year alcoholic who was once a high-school gymnast suddenly feels compelled to do cartwheels in front of Ernest Tubb's Record Store. A hooker jumps up on the hood of a Caddy, shimmies out of her tube top and starts an exotic dance. A lapsed Southern Baptist finds a Bible and begins reading aloud from the Book of Genesis, with ribald commentary on the travails of Adam and Eve. Someone props open the doors of his custom van, slaps a Waylon Jennings tape into the stereo, and cranks up the volume; within minutes people are dancing on the sidewalks, and then in the street. The bars and strip clubs and porno theaters empty out; bartenders start giving away beer, more hookers discard their clothes, and the roofs of half-a-dozen parked cars become impromptu dance floors.

It's not long before Metro Police arrive on the scene. At first, the officers do their jobs, making busts for public drunkenness and indecent exposure, but after a while they decide to let things slide. No one's getting hurt, after all, and gee, isn't it nice to see all those poor bastards happy for a change? So they hang around to make sure no one walks out in front of a moving car, and laugh when the alcoholic graduates from cartwheels to somersaults. One officer even dances with a transvestite.

At the warehouse, the firefighters not wearing respirators start losing interest in the blaze. Some become distracted and forget what they're doing; the fireman operating Pump Three switches off the feed valves when he's supposed to open them wider, while two others sit down on the bumper of a hook-and-ladder and start chatting about how much the fire resembles Van Gogh's *Starry Night*. Another decides that now is a good time to call his mother to wish her a happy birthday. Only the firemen wearing masks are able to perform their duties; this is one reason why the warehouse ultimately burns to the ground.

The following day, after the cinders have cooled and everyone involved has woken up with hangovers and bloodshot eyes, an official investigation is launched. Remarkably, the nearby hospitals have reported very few injuries: minor burns from a couple of firefighters, a few cuts and sprained ankles from the celebrants. Also, for the first time in months, no muggings, shootings, or robberies have been reported on Lower Broad. In fact, two hookers later give up their trade and go in search of straight jobs instead of jobs with straights, and the man who dropped out of church to become a drunk decides to give up the bottle and rejoin his congregation.

While everyone in City Hall is still trying to figure out what happened, someone at the fire department gets an inventory list from the warehouse owner. It turns out that the warehouse contained, among many other things, about 1,500 feet of rope, and that this rope was manufactured in Louisville, Kentucky, from hemp derived from *cannabis sativa*, sometimes also known as marijuana.

The Sheriff of Davidson County, upon reading the formal report

submitted to him by the fire department, looks up from the loose-leaf binder.

"Marijuana?" he asks. "What the hell's that?"

Marijuana is as much a part of American history as Old Glory. Indeed, early flags were made from cannabis hemp, a fact not without its own irony since the word "canvas" is the Dutch pronunciation of the Greek word "Kannabis." Beginning in 1619, when farmers in the Jamestown Colony in Virginia were ordered by law to sow Indian hemp seeds, *cannabis sativa* was grown throughout the original 13 colonies as a stable crop. Everything—sailcloth, fisherman's nets, clothing, table linen, lamp oil, paint, rope—was made from hemp; as a textile, it's softer than cotton, warmer and more water absorbent, and has better tensile strength. The original draft of the Declaration of Independence was written on hemp paper; the Continental Army under Gen. George Washington huddled within coats and blankets woven from hemp cloth while they waited out the long, cold winter in Valley Forge.

By the middle of the 19th century, cannabis was grown more extensively in the United States than cotton, and for good reason. It's more easily cultivated than cotton, especially in cool climates, and for a while it was more easily refined. All of its parts can be used; the roots, buds, and leaves of the female cannabis plants were being used to make elixirs for the relief of headaches, nausea, menstrual cramps, and other ailments. In 1850, over eight thousand hemp plantations were spread across the United States. Towns throughout the east and south were named Hempfield, Hempstead, or Hemphill; the first families to settle the Western frontier traveled across the plains in covered wagons whose awnings were made of hemp canvas.

It was not until Eli Whitney invented the cotton gin that cannabis was replaced as the largest cash crop in America; the costs of refining cotton finally became competitive with those of cannabis. Even so, hemp remained a major agricultural product in the United States. In fact, hemp twine was commonly used to bale cotton.

AT THE BEGINNING OF THE 20TH CENTURY, ALTHOUGH MILLIONS of acres of cannabis were planted from Virginia to California, only a relative handful of people knew that it was possible to get stoned on this stuff, and then only in the lowest tiers of American society. Mexican migrant workers in Texas and blacks in the Mississippi Delta, unable to afford anything better, learned that if you took leaves off the hemp plants they picked and rolled them into cigarettes, you could get a cheap high. But "marijuana," to use the Hispanic slang, was considered to be a poor man's kick; smoking it meant that you didn't have enough money to buy whiskey. Segregation also meant that it was a long time before white people learned about marijuana.

In the 1930s, a short-lived effort to outlaw the cultivation of marijuana was undertaken by Harry J. Anslinger, the director of the newly formed Federal Bureau of Narcotics. Anslinger was appointed to this job by President Hoover because his uncle-in-law, Andrew Mellon, was Hoover's Secretary of State. Mellon was the chief financial backer of the Mellon Bank of Pittsburgh, which in turn was a heavy investor in the DuPont Company. DuPont was developing artificial textiles which were intended to compete with cotton; however, the company was also aware that new processes had been recently invented which would soon make hemp cloth even less expensive than cotton. Andrew Mellon realized that DuPont's textiles would succeed only if hemp disappeared from the marketplace, so he got his in-law nephew in the new Federal Bureau of Narcotics to launch a public campaign against cannabis.

Anslinger discovered that blacks and latinos in the deep South were smoking marijuana; since these minorities were often involved in violent crimes, he fed sensationalized, and even patently false, stories to the press that marijuana was making all those coloreds do things like laugh at white men and rape white women. As outrageous as the hoax was, it nearly succeeded; in 1937, Congress began debating a proposed Marijuana Tax Act which would effectively outlaw cannabis cultiva-

tion in the United States by taxing its growers into oblivion. It was stopped when lobbyists from various industries dependent upon cannabis made a last-minute counterattack. Representatives from many large companies met with President Roosevelt and key members of the House and Senate and made them realize that the Marijuana Tax Act would destroy a large section of the nation's economy just when the country was struggling to recover from the Depression. Roosevelt and a coalition of Southern Democrats managed to swing enough votes to defeat the bill by a narrow margin.

Roosevelt fired Harry Anslinger shortly afterward. Then, as a concession to the hemp lobby, he ordered the Civilian Conservation Corps to plant 10,000 acres of cannabis on federal land in Tennessee and North Carolina.

IT'S AUGUST 16, 1969, AND IN A MUDDY FARM FIELD IN BETHEL, NEW York, more than 300,000 members of the post-war baby boom are causing an explosion of their own. So many people have traveled across the country for the Woodstock Music and Art Fair that the New York State Thruway has been closed. The gates have been crashed, cow ponds have been turned into swimming holes, nearby woods into communal toilets. National Guard helicopters are air-lifting food and medical supplies to the site, and a rainstorm has turned all these middle-class kids into mud-caked aboriginals. His- tory will remember this moment, maybe.

Behind the teetering stage, Jerry Garcia is having a really bad day. The Grateful Dead had driven all the way from San Francisco to be one of the featured bands, but now he's wondering if it was worth the effort. First, they had to follow The Who; if playing behind Pete Townshend and Keith Moon wasn't cold-blooded murder, then being followed by Jimi Hendrix certainly is. The shower left the stage covered with puddles of rain; their equipment wasn't properly grounded, so he, Phil, and Bobby received nasty shocks every time they touched their guitar strings. Pigpen's pissing and moaning because there isn't any booze and all these hippies have to offer is brown acid and jimson weed. The only mercy is that no one recorded them; the band refused to sign the Warner Brothers contract that would allow their set to be filmed or taped for the movie and record album rumored to be in the works. Considering that the Dead's brief performance was one of their worst, at least they won't have to be embarrassed by it later.

So Jerry wanders around backstage in search of something to take his mind off his troubles, and over there, leaning against a scaffold, is Ritchie Valens. Ritchie's the only teen heart-throb from the '50s to have successfully made the transition from rockabilly to acid rock; his hair is shoulder-length now, his latino back-up band is hip to his idea of playing electric Tex-Mex, and his albums are doing well enough that he isn't constantly fighting his record company the way the Dead are. Jerry and Ritchie are buddies from the Avalon Ballroom days, so Jerry saunters over to see what he's doing.

"Hey, cat, what's happening?" Ritchie barely glances up from the cigarette he's rolling.

"Too little, too late."

"Caught your set, man. You guys cooked."

Jerry laughs bitterly. "If you like raw meal."

"It wasn't that bad. I mean, it could have been worse . . ."

"That's what they say about a frontal lobotomy."

Ritchie looks up, catches Jerry's eye. They both know that he's being charitable. "Aw, hell, man," Ritchie murmurs, looking away. "You know what I mean. There's nothing you could have done."

"Guess so." Jerry's gaze falls on the cigarette Ritchie's rolling; it looks twisted and weird. "Hey, spare yourself the effort," he says, reaching for the Marlboros in the pocket of his black T-shirt. "Have one of mine."

Ritchie shakes his head. "Don't smoke. Not those, at least."

"So what's that?"

"Marijuana. Ever heard of it?"

Jerry grimaces. Back in his folkie days, when he and his songwriting partner were living in a beat-up station wagon and couldn't afford cigarettes, they found some discarded rope down on the wharf. Having heard rumors that hemp could be smoked, they bought a pack of cigarette papers and tried to roll the fibers into makeshift cigarettes. They puked their guts out. "Aw, no, man. Thanks anyway."

"You sure, man?" Ritchie licks the top of the cigarette paper, neatly folds it over, and offers it to Jerry. "Better than what you're smoking. In fact, I kicked cigarettes after I started with this."

"No kidding?" says a new voice. "Really?"

Some guy has just wandered by: tall, long blond hair beneath a headband, goofy grin. Mid-forties: way too old to be a hippie. When he stops in front of Ritchie, Jerry notices that the pupils of his blue eyes are dilated. Strung out on acid. Another substance Jerry's learned to distrust. Give him jimson weed any ol' day. Kinda fucks up your eyes, though . . .

"You can stop smoking if you use this? No shit?"

Ritchie nods. "No shit. Want one?" He offers the hemp cigarette to the newcomer.

"*Muchos gracias.*" The old hippie accepts the twisted cigarette, sticks its tapered end in his mouth, pats the pockets of his dirty string vest in search of a match. "Gotta light?"

Jerry finds his Zippo, flicks it to life. "Careful with that. It's not what you're expecting..."

"Expect nothing, accept everything. My motto." He bends down and lets Jerry light the cigarette. He takes a deep drag, exhales smoke through his nostrils. "Jeez, that's good." Then he offers his hand to Jerry. "Name's Tim. Glad to meet you."

Jerry shakes Tim's hand, then watches as he sails away. "Who was that?"

Ritchie shrugs. "Some guy from Boston. He's been hanging around back here, giving acid to anyone who wants some. Claims he's a Harvard professor . . ."

"Yeah, right." Jerry shakes a Marlboro out of his pack. Ritchie begins rolling another cigarette. How anyone could smoke hemp is beyond him. "So when are you on?"

"Right after Jimi, then I gotta find a way out of here. We've got a charter plane waiting in

Albany to take us to another gig." Ritchie shakes his head. "Fuck, I hate flying . . ."

"I hear you, man." Jerry lights his cigarette and tucks the Zippo back in his pocket. "Well, I'm going to go find my guys, see if we can get out of this hellhole."

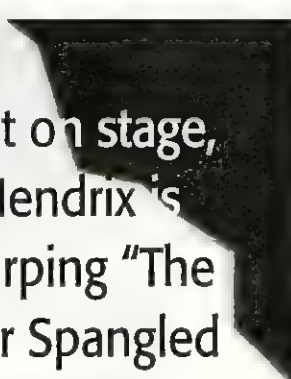
"Where you going next?"

"I dunno." Jerry shrugs. "Back to California, I guess." It's hard to keep the envy out of his voice. "After today, I'm half-inclined to bag this Grateful Dead shit. Try going solo, maybe."

"Gimme a call when you get back." Ritchie drops his voice. "Carlos is talking about cutting out to start his own band. I could use another guitar player."

Out on stage, Hendrix is warping "The Star Spangled Banner" into something that sounds like a mutant invasion from space. It makes the Dead sound like a jug band. "Yeah, maybe I will," Jerry says. "Thanks."

Ritchie smiles. "Cool. Catch you later." He walks away.



Out on stage,
Hendrix is
warping "The
Star Spangled
Banner" into
something
that sounds
like a mutant
invasion from
space.

Jerry takes his place against the scaffold. Yeah, he could get into working as a sideman for Ritchie. Fat chance that the Dead will ever make it big.

Just as long as he doesn't have to smoke any rope . . .

THE REPUBLICANS MADE A STINK ABOUT THE GOVERNMENT CANNABIS plantations in the Great Smoky Mountains, claiming that Roosevelt was trying to appease the hemp industry at taxpayer expense, but it soon turned out to be a fortunate decision. When the United States entered World War II four years later, the armed forces needed all the hemp they could get, for everything from uniforms to gun belts to parachute harnesses. Even then, it wasn't enough. After the Philippines fell to Japan and Russia was invaded by Germany, overseas hemp supplies were cut off and America was forced to grow its own.

By the end of 1942, hemp was being cultivated across the South in record numbers and Midwest dustbowls were becoming vast plains of towering cannabis stalks. In the musical *Oklahoma!*, Rogers and Hammerstein immortalized the period with the stanza, "where the weed is as high as an elephant's eye." Seeing wartime profits, DuPont forgot its support of the Marijuana Tax Act and purchased patent rights to as many cannabis processing inventions as it could acquire. Other companies quickly followed DuPont's lead; they developed efficient new means of utilizing cannabis for a wide variety of industrial and consumer products. Indeed, America felt few of the shortages that Europe experienced: printers switched from wood to hemp pulp, automobile makers redesigned car engines to run on cannabis oil, and clothing manufacturers discovered that certain *cannabis* strains were capable of producing inexpensive fabrics as fine as silk. The word "marijuana," along with its negative connotations, was quickly forgotten.

When the war ended, cannabis emerged as the No. 1 cash crop in the United States, replacing cotton as the textile of choice. It grew almost anywhere, and more reached maturity much more quickly; one acre of cannabis yielded more than four acres of cotton. It was resistant to most pests and forced out competing weeds; since pesticides were virtually unnecessary, the soil in which it was planted was unharmed. It was easy to harvest, and even easier to plant. Indeed, cannabis soon became known as "the lazy farmer's crop."

Although auto makers soon returned to gasoline-fueled engines as the industry standard, other industries found new uses for the hardy weed. Brake fluid, diapers, fiberboard, cement blocks, birdseed, oil paints, cosmetics, salad oil, animal feed, mulch, books, carpets, headache medicine, drapery, socks, books, and magazines . . . all were made from cannabis products and byproducts.

Agricultural firms incorporated the cannabis leaf in their corporate logos. Corporate representatives from Brazil, Japan and Australia were proudly shown vast warehouses of cannabis being cured before being destalked, seeded, and sent to processing plants. Members of Congress were voted in or out of office on the basis of how well they supported the hemp industry. Political candidates walked through cannabis farms in Georgia or Alabama, coats slung over their arms, ties loosened, cannabis leaves tucked in their mouths. "How high's y'all's weed, suh?" they drawled. The big scene in *North By Northwest* was when Cary Grant sought to elude a biplane by ducking into a Nebraska hemp field. Schoolchildren earned approval from their teachers by shooting up their arms: "I know, I know, I know . . . 25,000 uses!"

And it was only in the barrios and ghettos, safely segregated from mainstream America by separate-but-equal soda fountains, restrooms, and motels, where cannabis told its dirty little secret. Down there, black housekeepers and latino farmhands rolled marijuana cigarettes as they listened to race music on low-band AM radio stations.

All this changed when Timothy Leary smoked his first joint at Woodstock.

EXT.—BEACH—DAY

MEDIUM SHOT of a beautiful California BLONDE in a bikini, surfing at Malibu.

THEME MUSIC comes up: bright, jingly pop-rock.

SINGER (V.O.): It's your natural way . . .

CAMERA FOLLOWS the blonde as she comes out of the ocean and runs to her

BOYFRIEND—handsome, clean-cut, affluent—who is lying on the beach. He offers THE PRODUCT to her.

SINGER (V.O.): It's your natural style . . .

INT.—CLUB—NIGHT

CLOSE SHOT of a rock band performing in an upscale nightclub. The SAME COUPLE, now wearing stylish clothes, is seated at a table directly in front of the stage, relishing every moment. They're both smoking THE PRODUCT.

SINGER (V.O.): It's the way you live today . . .

EXT.—STREET—NIGHT

MEDIUM SHOT of the COUPLE as they saunter down a brightly lit city sidewalk. They pause to watch a STREET MIME doing a routine, then laugh and pretend to be washing windows with him. The BOYFRIEND is smoking PRODUCT.

SINGER (V.O.): Make the most of it now!

EXT.—PARK—DAY

MEDIUM SHOT of the COUPLE sitting on a park bench, cuddled together, feeding ducks in a nearby pond. CLOSE-UP of the PRODUCT laying on the bench beside the BOYFRIEND.

ANNOUNCER (V.O.): It's a whole new era for smoking pleasure . . . ERA, the natural herbal cigarette. No tar, no nicotine, no preservatives . . . only total excitement!

EXT.—DRIVEWAY—DAY

MEDIUM SHOT of the COUPLE washing a sports car. The BOYFRIEND raises a garden hose and playfully squirts the BLONDE. She opens her mouth to catch the glistening water.

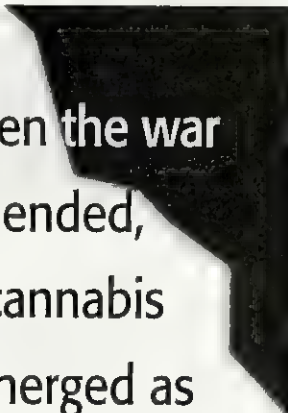
SINGER (V.O.): It's the way you live today . . . Make the most of it now!

CLOSE-UP of the PRODUCT laying on the front seat of the sports car.

FADE OUT.

TIMOTHY J. LEARY WAS A PROFESSOR OF PSYCHOLOGY AT Harvard University until 1964, when he was fired because of controversial student experiments involving LSD. His dismissal from Harvard marked the beginning of a downward spiral in Dr. Leary's personal life. Emotionally fragile from his first wife's suicide, scorned by the news media as a "mad scientist," ostracized by the academic world, Leary suffered a nervous breakdown; some claimed it resulted, at least in part, from using LSD himself. He vanished for a few years, then resurfaced in the late '60s in Greenwich Village, where he played the role of a self-styled "acid guru" on the fringes of the New York counter-culture scene while making a paltry living as a freelance writer for *Ramparts* and *The Village Voice*.

Leary might have vanished into obscurity had it not been for his



When the war
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chance encounter with Ritchie Valens at Woodstock. By this time, Leary had become a heavy smoker; friends remember that he went through two packs of Camels every day, although he often claimed that he wanted to quit. While hanging out backstage at Woodstock, Leary ran out of cigarettes; unable to buy more, he was constantly bumming off musicians and roadies. Then he snagged a marijuana cigarette from Ritchie Valens.

According to *Leary!*, his best-selling 1974 autobiography, Timothy Leary quit smoking virtually overnight at Woodstock as a result of that one "joint." He smoked it down to the nub, then wandered out to the hillside and watched the bands play. Three hours later, when he finally found himself craving tobacco again, he returned to the backstage area in search of Valens. Valens had vanished by then, but fortunately he had left his sandwich bag of marijuana and cigarette papers on an amplifier. Leary found them; he rolled another joint, put the baggie and the papers in his back pocket, and returned to the hillside, where he contentedly smoked marijuana throughout the night. The following morning, while the Jefferson Airplane gave its last public performance as a band, Leary left the festival and hitchhiked his way back to New York City. Although he had ample opportunity to do so, he never bought or bummed another cigarette. He had experienced his last nicotine fit; if he was ever going to smoke anything again, it would only be marijuana.

Leary abandoned LSD as a dead-end and turned his attention to cannabis. He spent months in the New York Public Library researching the hemp industry; when that wasn't enough, he borrowed money from friends and drove his secondhand Volkswagen down South, where he spent several more months interviewing latinos and blacks in Mississippi, Louisiana, and Texas. There he learned not only that cannabis had been smoked for decades, but also that the leaves and flowertops of its female form—which contained the psychoactive tetrahydrocannabinol, or THC—had been routinely combined with its inactive male counterpart during the growth, harvest, and processing stages of its industrial cultivation. Pharmaceutical companies had been using THC for years as the active ingredient in non-prescription painkillers, but poor blacks and latinos had learned the same thing through hand-me-down folk knowledge: only the flowering hemp plants were worth smoking, while leaves from male plants were harsh and often sickening. Both were customarily harvested and processed together by the textile and paper industries, but it did no good to try smoking a shirt or a magazine, unless you burned shirts or magazines or carpets in such massive quantity that the THC values were upped considerably.

Through trial-and-error experimentation, Leary discovered that leaves from male and female *cannabis sativa* could be blended to produce a herbal tobacco substitute that was nonaddictive, nicotine-free, and only mildly euphoric. Not only that, but smoking a blend such as this in the same quantities as tobacco cigarettes would effectively kill nicotine fits. In other words, it was the perfect cigarette for people who smoked, hated it, but couldn't quit.

Leary wrote up his findings as a 50-page proposal, then went in search of backers. He avoided contact with the major tobacco companies, and concentrated instead on well-heeled hipsters whom he had met while haunting concert backstages and upscale parties. Most politely nodded and wished him good luck, but after 18 months he managed to find eight who were willing and able to invest in his idea. With their financial backing, Leary founded the Era Cigarette Company, and with a multimillion-dollar TV and print ad campaign, launched the Era herbal cigarette in May 1972.

Earth shoes. Mood rings. Hip-huggers. Black-light posters. *The Sonny and Cher Hour*. Era cigarettes. All these things were hip during post-Vietnam America, when everyone was groovy and even congressmen sported long sideburns. For about six months, Era was enormously popular; even people who had never smoked before tried them, just so they could say they had. In a very short time, Timothy Leary went from being a washed-up ex-Harvard prof to "Doctor Tim," the hippie entrepreneur who was a regular on *The Dick Cavett Show*.

Then, just as quickly, Era cigarettes fell from grace. Smokers complained of drowsiness, bloodshot eyes, and uncontrollable fits of

hunger. Hairdressers said that they could always tell whether a customer smoked Eras because their hair would be frizzy, full of split ends. Those who bought Eras to wean themselves off tobacco often said that the herbal substitute made them crave cigarettes even more than before. And finally, people began to gradually admit that, no matter how cool or trendy they might be, Eras tasted like shit.

In early 1973, Congress outlawed cigarette advertising in the broadcast media. When the fun-loving Era Couple vanished from TV screens, sales plummeted. Leary met with the company board of directors; after two days of argument, they decided to retrench and regroup. Era would be taken off the mainstream market and instead sold in tobacco shops and healthfood stores, where consumer demographics showed there were still enough buyers to keep the product afloat.

The remarketing strategy succeeded. Era vanished from grocery shelves and cigarette machines, but it didn't become extinct; it fit into a specialized marketniche, comprised mainly of people who actually liked its earthy taste and somnambulant buzz. So Era continued to sell a few hundred thousand cartons a year, which was just enough to keep the investors happy and Doctor Tim stocked with whatever bathtub hallucinogen he was experimenting with this week.

Then a warehouse in Nashville burned down, and everything changed.

THE APPOINTMENTS SECRETARY TO THE FIRST LADY WALKS into an anteroom on the second floor of the White House. "She'll see you now," she says to the pudgy young man sitting on a couch.

Al Costello, Assistant Director of the DEA, puts down the issue of *National Review* he's been skimming for the past two hours and follows the secretary into the adjacent office. The First Lady is seated behind her desk, talking on a phone. She raises an imperious finger as she swivels her chair away from him. The secretary shows Costello to an armchair in front of the fireplace, asks him if he wants coffee, then disappears.

Costello waits nervously while the woman behind the desk—by some accounts, the second most powerful person in the United States—winds up her conversation. He stands up as the First Lady crosses the office to extend her hand. She's much smaller than she looks on TV; the taut skin of her face is strangely artificial, as if molded from nonporous wax.

She's just taken a seat across the butler's table from him when the secretary reappears, carrying a china service engraved with the Presidential seal. She pours coffee for him before vanishing again. The First Lady doesn't take coffee; Costello decides to let his go cold. Her smile is polite but her blue eyes are cool. He's been waiting five weeks for this meeting; now he's got five minutes.

Costello begins with a brief rundown of the facts. The use of cannabis as a narcotic is rapidly escalating across the country. Although hemp is legally grown in all 50 states, no one ever believed that its female parts (she raises a hand to her prim mouth and coughs) . . . that is, the leaves from seed-bearing plants (a faint nod) would ever be used as a recreational drug. However, the incident in Nashville last year has caused cannabis to gain widespread popularity. There are reports that "marijuana," as it has become widely known, is penetrating the mainstream as a . . .

"Yes, yes." The First Lady is a trifle impatient. "I read the newspapers. Why is this of interest to the President?"

Trying to hide his nervousness, Costello picks up his coffee. It's gone lukewarm. She stares at him when he slurps it, her eyes following his hand when he returns the cup to the table. "Yes, ma'am, I'm sure you do. Since the President has spoken out against illegal drug use and you yourself have made this an important item of your agenda, we at the DEA were hoping . . . that is, we would like to request . . . that you aid us in a public crusade against hemp smoking."

Her eyes don't blink. "In what way?"

"The DEA has developed a public affairs program that would target young people, particularly those in high school and college, where demographics show that marijuana has made the greatest impact. It

would warn them that use of cannabis can lead to acute mental illness, loss of primary motor skills, hair loss, sexual impotence (cough, glare) . . . pardon me, loss of reproductive ability . . . even death. The program will revolve around a slogan—very simple, easily understood—which would be put on posters, T-shirts, billboards and so forth, and also be used in a nationwide TV and radio campaign. What we need is a prominent public figure to introduce the slogan in such a way that would seem like a spontaneous remark.”

The First Lady's face remains neutral.

“I see,” she says at last. “And just what is this slogan?”

“Just say no.”

The First Lady blinks. “Just say what?”

“Just say no.”

“Just say no what?”

“Just no.”

“No?”

“No. Just no.”

“No what?”

“No! Just say no! That's all. Just . . . say . . . no.”

The First Lady stares at him. “That's the stupidest thing I've ever heard.”

An hour later, over a pizza lunch in the food court of the Old Post Office mall, Costello reiterates this incident to a friend who works as a legislative aide to a North Carolina senator. The aide smiles and chuckles, and finally laughs out loud when Costello professes his belief that the First Lady was stonewalling him.

“Of course she was,” he says, stirring his half-empty soda with a straw. “I wish you would have told me about this before you went over there. I could have warned you.”

“Warned me about what?”

The aide shakes his head. “Ever heard the name Joseph Templeton? He's CEO of Pacific AgriCorp, the largest hemp grower on the west coast. Close personal friend of the President and a major campaign contributor. You just went in there with a campaign that would put him out of business. Jeez, you're such a schmuck.”

At the next table over, a businessman lights an Era. The two men watch as he settles back in his chair and blows a luxurious smoke ring. “So that's it?” Costello asks quietly. “People keep smoking this stuff?”

The aide smiles. “Don't sweat it,” he says. “We've already got people working on it.”

SAT scores are down. High school students across the country are failing college admission exams in record numbers. Teachers complain that discipline is falling. Questionnaires show that many students have started smoking marijuana; if they can't find them in local tobacco stores, then they sneak into local hemp fields late at night. The ones with the seeds are the good stuff.

Johnny Carson has Timothy Leary on his show. Doctor Tim lights an Era to show that there's nothing wrong with his product, then cracks up in front of six million viewers when Johnny shows him his mismatching socks.

A commercial airliner crashes in Colorado, killing all 76 passengers and six crewmembers. No marijuana is found aboard, but an investigative journalist from the *Rocky Mountain News* discovers that the flight engineer smoked marijuana at a Halloween party 12 days earlier.

The *Washington Post* publishes a story about an 11-year-old boy, safely anonymous, who claims to be a heroin addict. The child commits robberies to feed his habit. He says he got started by smoking marijuana at age seven. City child-welfare officials fail to find this child, and there's dark rumors that the story is a hoax, but the story makes the national wires and the reporter receives a Pulitzer.

It's in *Newsweek*. It's in *TIME*. It's on the five o'clock news and the six o'clock news and the ten-o'clock news. *Nightline* devotes an hour to the Marijuana Menace; Ted Koppel pits Doctor Tim against Surgeon General C. Everett Koop, and one of them isn't under the influence. Two weeks later, Leary announces that he's moving to Switzerland. Better ski conditions.

Polls show that 72 percent of Americans want marijuana to be outlawed; only 13 percent are aware that marijuana is derived from cannabis, and less than eight percent know that hemp is the largest cash crop in the United States.

The First Lady makes an appearance at a Washington drug rehabilitation center. “Just say no,” she says, and a new sound bite is born. Cotton growers and synthetic textile manufacturers soon become the largest contributors to the President's re-election campaign, and congressmen running for re-election soon receive heavy donations from their PACs.

In June 1984 five years after the Nashville warehouse fire, bipartisan bills are introduced on the floors of both the House and Senate to outlaw the cultivation, processing, and production of *cannabis sativa* in the United States.

By coincidence, it just happens to be an election year.

LLOYD PULLMAN'S SITTING ON THE FRONT BUMPER OF HIS PICKUP truck when the County Sheriff arrives. He drops his cigarette and stamps it out under the sole of his workboot, but doesn't stand up as Bill Von Norstand gets out of his cruiser and saunters over, pulling up the seat of his pants.

“Morning, Lloyd.”

“Morning, Bill. How's it going?”

“Fair to middlin'. You?”

“Could be better.”

It's almost nine o'clock. The July sun isn't halfway up the sky, and heat is already beginning to rise off the dirt road running past the west side of Pullman's farm. Blue hills rise in the distance beyond 10 foot stalks of Kentucky hemp. The spring was nice and rainy, the first months of summer moist and hot: the best growing season Pullman's seen in years. His plants should be 20 feet high by Labor Day, just in time for harvest . . .

Pullman scuffs the toe of his boot on the ground. He has to stop thinking like that.

“Yeah, I imagine so.” Sheriff Von Norstand looks uncomfortable. He pulls off his mirror shades and wipes their lens on the front of his uniform shirt. The walkie-talkie hooked to his uniform belt chatters; distant voices vying for his attention. Bill ignores them. “I'm really sorry about this, Lloyd. If there was any other way . . .”

“Not blaming you. Ain't your fault.”

Von Norstrand seems relieved. He and Pullman have known each other all their lives; they grew up together in Dolores, went to the

MARIJUANA ENTERED THE AMERICAN MAINSTREAM just when the nation's political sails were beginning to tack to the right. Two decades of social experimentation were being called into question; where the liberal doctrine had reigned supreme, conservative objections were quickly gaining ground. The economy was suffering because industry was overregulated. Schools were bad because students weren't being taught traditional subjects. Crime was rising because criminals weren't being prosecuted. Women were getting uppity, minorities were getting too much power, and the poor were poor because they wanted to be poor; no one had shown these people the error of their ways.

It had to be somebody's fault. Can't be your's or mine, so it must be someone else's.

Someone driving on the Los Angeles freeway during afternoon rush took a wrong left turn, slammed into another car which hit another car. The pile-up caused a 10-mile traffic jam and sent four people to the hospital. Highway patrolmen discovered a pack of Eras on the dashboard of the first car. The driver had been smoking marijuana.

Productivity at manufacturing plants across the country drastically falls in the last six quarters. Line workers show up for work later than usual, take more breaks, call in sick more often. Quality suffers; consumers begin buying more retail goods from foreign sources. A well-publicized study shows that more than half of the blue-collar employees report smoking marijuana.

same schools, played on the high school basketball team, double-dated for the '67 Senior Prom. After Lloyd graduated from Kentucky Tech and Bill came home from 'Nam, they returned to Dolores. Many of their friends had long since packed up and left, but they wanted to settle down and raise families. This is the best place in the world.

Bill reaches into his back pocket, pulls out a folded sheaf of type-written paper, creased in the middle from where he's been sitting on it. "Well, let's get it over and done with," he murmurs unhappily, straightening out the papers with his rough hands. "I think I'm supposed to read you some stuff . . ."

"Don't bother. I know what it says already." Lloyd's already received a draft of the same form, along with countless manila envelopes containing even more forms, from half a dozen federal and state agencies. He had read them countless times, often late at night at the kitchen table after Margie and Louise had gone to bed, sometimes while making his way through a six-pack of beer. The ones he had to sign, he had already sent back. This is the last one: the one that counts.

The Sheriff looks relieved. "Good. Didn't want to do it anyway." Still, he stares at the forms, as if afraid to look his oldest friend in the eye. "God, Lloyd, if there was any other way, I swear . . ."

"There isn't, so just shut up about it." Lloyd's voice is uncustomarily harsh. "You're not making it any easier, so cut it out."

From down the road, the dim mutter of an approaching truck. Dust rises from somewhere just out of sight. Lloyd stares that way for a moment; when he looks back again, he sees that Bill has put on his sunglasses again.

"You're not going to give me any trouble about this, are you?" Bill asks. His voice is neutral.

Lloyd gazes past his own reflection, straight into the invisible eyes of the man who introduced him to Margie when he was still dating her. "You know me better than that," he replies softly. "Now take off those cheaters."

Bill drops his head in embarrassment. "Sorry." He takes off the mirror shades, tucks them into his shirt pocket below his badge. "Been hard on me, too. Suppose you heard what happened last week with Joe McNeil . . ."

McNeil's another hemp farmer on the other side of the county. Younger man, newcomer to Dolores; moved here from Arkansas just 12 years ago. Nice guy; sings in the choir at Bill's church. When Bill came to see him, McNeil refused to sign the papers; he tore them up, argued with Bill, then threw a punch at one of the guys from the truck. Bill had to take him away in handcuffs. McNeil's now serving a 60-day sentence in the county workhouse, and there's talk that the D.A. may be pressing state and federal charges.

"I'm not that way," Lloyd says, and he isn't. The last thing he wants is to have Margie bring Louise down to jail to visit her old man. The truck is in sight now, a distant speck between barbed-wire fences. "Let's just get it over with."

Bill places the papers on the hood of Lloyd's truck, flips to the last page, smooths it out with his hand, then unclips a Bic pen from his pocket and hands it to Lloyd. Lloyd takes one last look at the field, then he signs his name, enters his Social Security number, and dates it.

Two generations of hemp farming, gone like that.

Bill had just signed his own name to the form when the truck comes to a halt behind his cruiser. The truck is gray, and has U.S. Department of Agriculture decals on its doors. The front bumper sports a peeling Van Halen sticker. Four young men climb out: mid-twenties, beards and long hair, early beer bellies. White trash kids,

hired to do the dirty work. Rock music blasts from the radio until the driver cuts off the engine. They stretch and polish off paper cups of 7-11 coffee, then the driver shuffles toward Bill.

Bill turns away from Lloyd. He meets the driver halfway, hands him the paperwork. The crew chief scans the forms, murmurs something to Bill. Lloyd can't hear what they're saying and could care less. The crew chief takes the paperwork back to his truck and stashes it under the front seat. One of his men is taking a piss on the shoulder of the road; he zips up when the boss whistles for him, then ambles to the rear of the truck. The others follow. They've got a long day ahead of them.

Lloyd's already climbing into his truck when Bill catches up with him. "You sure you don't want to watch?"

Lloyd glances in his mirror. The kids are already unpacking their flame throwers. They're supposed to wear air masks, but he doubts any of them will put them on. Fringe benefits.

"Naw," he murmurs, slipping the key into the ignition. "Why bother?"

Bill nods. "So what are you going to do now?"

"I dunno." Lloyd starts up the truck. "Haven't decided yet. See you 'round, Bill."

"So long. Take her easy."

Bill taps the cab's roof and Lloyd drives away, heading down the road toward the state highway. Soon as he's out of sight, he steps on the gas. He's running late for an appointment with a farm realtor in Lexington.

He glances once in his mirror, and quickly looks away when he spots a thick brown plume rising from his property. Some of that smoke must have gotten into his eyes; a couple of miles down the road, he pulls over to dry the tears from his eyes.

THE MARIJUANA PROHIBITION ACT OF 1984 succeeded where the Marijuana Tax Act of 1937 failed.

Because it didn't distinguish the difference between the strains of *cannabis sativa* which had THC and those which didn't, all varieties were criminalized. That subtle point wasn't lost on the legislators who wrote the act; they were merely acting on the advice of the special-interest groups who wanted hemp out of the way. The net effect was the same. Sixteen months after President Reagan signed the act into law in a Rose Garden ceremony, cannabis ceased to be the largest cash crop in the United States.

Era cigarettes disappeared from the shelves of tobacco shops and health food stores. Some store owners, believing that the

new law wouldn't be strictly enforced, attempted to sell their remaining stock under the counter; when FBI agents and undercover cops began making busts, though, even that gray market ceased to exist. The Era Cigarette Company declared bankruptcy; a short time later, Timothy Leary discovered that the U.S. State Department had revoked his passport, making it impossible for him to return to his native country. By then, he had been diagnosed with cancer; at least in Switzerland, he was able to legally purchase marijuana to ease his pain.

That was only the beginning. Airline pilots reported seeing vast columns of smoke rising from farm fields in every corner of the United States, from New England to Southern California. In parts of the rural South and Midwest, smog alerts were issued where none had ever been before. Parents were warned to keep children indoors, windows were kept shut, and people could be seen wearing surgical masks on the streets.

The prohibition became a media scare. A favorite plotline of made-



"Just say no?"

The First Lady
stares at him.

"That's the
stupidest
thing I've ever
heard."

for-TV movies was someone committing robbery, rape, and/or murder after using marijuana. Deadly Weed had its villain peddling shanks of hemp rope in school playgrounds before he's caught by a plucky young housewife and a folksy old detective; it was, of course, *Based On A True Story*. A popular far-right TV commentator decried "mary-jew-wanna"—no one missed the allusion in his mispronunciation—as a sinister plot to destroy the United States of America; several tobacco stores that once sold Eras had their windows smashed or painted with swastikas. A self-described "former marijuana addict" published a best-selling memoir about her years as a junkie, complete with lurid descriptions of being forced into prostitution just so she could buy another pack of Eras.

As hemp farms across the country were sold, foreclosed or abandoned, a domino effect began to set in. Hemp companies are forced to purchase new equipment that could process raw cotton instead of cannabis; many chose to simply declare bankruptcy. The pharmaceutical industry suddenly found itself without a major source; non-prescription painkillers became expensive, and cancer and AIDS patients found themselves deprived of nonprescription painkillers that they once depended upon. Paper costs skyrocketed when printers found themselves having to switch to wood pulp; vast tracts of forestland were clear-cut on a scale never before seen, and the publishing industry went into turmoil as the price of newspapers, magazines, and books rose faster than reader demand. Several publishers went out of business altogether.

EVERYTHING, COSMETICS, HOUSEPAINT, ENGINE LUBRICANTS, livestock feed, construction materials, electrical insulation, baby laxatives . . . suddenly, a lot of commonplace things became much more expensive, and less people were able to buy them. By 1990, inflation and unemployment pushed the United States into a recession.

Yet, although cannabis had been outlawed, the Marijuana Prohibition Act didn't eradicate cannabis. Congress might have just as well attempted to repeal the law of gravity in order to help the space program. Even after every hemp plantation in the country had been torched or sprayed, uncultivated cannabis still grew wild along roadsides and in meadows. It was a weed, after all; it was pernicious, tending to grow wherever its seeds found ground. When the media scare died down, when people began to realize that a hand-rolled joint wouldn't drive you insane and that you couldn't get high by smoking an old T-shirt, an underground market developed that no propaganda campaign could stop. Outlaw farmers cultivated marijuana in backyard gardens and forest clearings; when some were raided by cops or DEA agents, others moved indoors, cultivating it in attics and cellars. Stop people from growing marijuana? Sure. Right after you stop them from growing tomatoes and carrots.

Organized crime tried to move in, and for a while it found marijuana as a means to introduce customers to harder drugs. It worked in the inner cities, yet even the Mafia couldn't control all the little victory gardens springing up across the heartland. You can't sell something that people have learned to grow for free. Country mice taught city mice a few tricks, but by then there were millions of hard-core drug addicts dependent upon heroin, cocaine, and crack.

The marijuana prohibition lasted until 1998. And then, something happened.

"If I HAD A SECOND CHANCE, I PROBABLY WOULD HAVE INHALED..."

The President of the United States, seated on a stool before an MTV studio audience.

The tape freezes just as the audience breaks into laughter and wild applause.

A dozen men and women are gathered in a sitting room on the second floor of the White House. It's another late-night policy session: Empty pizza boxes and soda cans are scattered across the tables, everyone has their ties loosened. The President is wearing a cardigan sweater and jeans; he shifts uncomfortably in his armchair.

"Not one of my best moments, was it?" he asks.

Some chuckle; a few wince. The young aide holding the VCR remote shakes his head. "Actually, Mr. President, I disagree. I believe that this was a defining moment in the campaign."

Several people protest loudly, but the aide raises his hand. "Yeah, yeah, I know . . . the Republicans jumped all over it, and the opposition used it in their attack ads. But it didn't lose us the election the way everyone thought it would. In fact, if anything, it helped solidify our lead in the polls, and we've got the numbers to prove it."

"Prove what?" This from a cabinet undersecretary leaning against the fireplace. "George, that tape's 13 months old. It's ancient history. What are you trying to get at?"

The aide glances at the President. He's steeped his fingers together in front of his mouth, saying nothing, listening intently.

"What I'm getting at," he replies, "is that I think we've stumbled onto something, and that's how unpopular the Marijuana Prohibition Act has become among the rank-and-file voters."

Silence. "Are you suggesting that we move to repeal the act?" someone quietly asks.

He shrugs. "Sort of, yes."

Groans from around the room. "The churches will cream us!" the undersecretary snaps, flapping a hand dismissively. "The Christian Coalition . . . !"

"The Christian Coalition threw their weight behind first Buchanan, then Dole." The aide remains calm. "Look where it got them. Forget 'em. Look at the facts . . ."

Everyone's paying attention now. "The act has been on the books for 13 years now, and look where it's gotten us." The aide begins ticking off his fingers. "It's hurt the economy. It was a major driver behind the last recession and put a lot of people out of work. Many companies either have had to shut down or had to retool from the ground up. We've spent hundreds of billions of dollars trying to enforce the law and millions of people have been sent to jail, but you can still walk two blocks from here and buy a joint on the street. Organized crime has used the marijuana black market as a gateway to hard drugs that we could wipe out if it didn't exist . . ."

"Got any numbers to back that up?" The President's voice is soft, but it draws every eye in the room. The President always asks for statistics when he's interested in something.

The aide nods. "Plenty, sir, but even they're not the most significant ones. My people have checked several different polls taken on this issue, and the average is that . . ."

He picks up a legal pad next to his chair, flips back a page. "Twenty-two percent of the country wants the act repealed, 37 percent favors deregulation, and 16 percent favors decriminalization with broad-based controls. Twenty-two percent wants the law to stay unchanged. Eight percent are undecided."

He looks up from the pad. "That means less than one in four wants marijuana prohibition to remain as is. Almost everyone else thinks it's a crock."

Someone in the back of the room whistles. Low murmurs from around the room. "I dunno," one senior adviser says, straightening her skirt. "This might not go down on the Hill."

"Somehow, Martha, I just knew you were going to say that." Everyone laughs; the aide leans forward to rest his arms on his knees. "I've got word from the House that a bipartisan group of six Dems and four pubs are prepared to co-sponsor a deregulation bill if we come on board. Three Dems and two pubs in the Senate are ready to introduce the same measure on their side of the Hill if we go first."

Silence. Everyone looks at each other.

"Names," the President asks.

"The man wants names . . ." The aide flips to the next page, reads the names of senior congressmen and senators from both sides of the aisle in either house. Everyone gasps when he gets to a Republican senator who wouldn't agree with the President on the time of day. "Nobody's on the record yet," the aide finishes, "but they're committed in principle. They're waiting for the nod from here."

The cabinet undersecretary scowls. "For the record," he mutters, "I'm utterly opposed to this proposal." He shifts his legs as if to rise.

"Your objection is noted," the President says, giving him a cold look that says that his resignation would be welcome if tendered. The undersecretary remains seated; he stares down at his lap.

The President glances at his watch and takes a deep breath. "Folks, it's getting late, and my daughter wants help with her homework. Let's table this until next week, all right?"

Everyone stands up to stretch. A couple of people rummage through the pizza boxes in search of an untouched slice. The President starts to head for the door. Then, almost as an afterthought, he steps over to the aide.

"Are you sure you've got numbers for all that?" he asks very quietly. The aide smiles; the President nods. "On my desk, tomorrow morning."

"Yes, sir. They'll be there." The aide watches as the President heads out the door, then picks up his legal pad. It's going to be another all-nighter in the Old Exec, but he doesn't care.

God, this is why he loves being a policy wonk. Every now and then, you get a chance to do something really cool.

ON THE MORNING OF DECEMBER 1, 1998 THE President of the United States signed the Omnibus Cannabis Deregulation Act. He performed the ceremony in the company of several dozen senators and representatives from both parties; when he was through, he handed his pen to Timothy Leary's widow. Then he went outside with his family to light the National Christmas Tree.

The new law was not forged without bloodshed. Indeed, it was the most fiercely debated subject of the past few years. Dozens of congressional sessions were held to debate the act; thousands of hours of testimony were given before various subcommittees. Lobbyists supporting and opposing the measure ran up enormous phone bills and spent countless hours in hotel rooms and airplanes. Dire political threats were issued by both sides, followed by counter-threats. Two large demonstrations, pro and con, were held in the Washington Mall, in front of the Capitol. Polls were made, and then more polls. Every magazine and newspaper in the country weighed in with their opinions, ranging from the thoughtful to the banal. Woody Harrelson brought a potted hemp plant onto the Letterman show and Pat Robertson told his audience on the *700 Club* that Jesus opposed marijuana decriminalization. Rush Limbaugh went berserk for 15 months straight before he suffered a stroke in the back seat of his limo. For the first time in recent memory, the abortion-rights issue took a back seat on the national agenda.

When everything was done, and all the necessary compromises were reached, marijuana prohibition came to an end in the United States.

Industrial hemp was once again allowed to grow, albeit under strict Department of Agriculture guidelines. So was THC-potent marijuana, but under strict FDA regulations, and only by specially licensed farmers. Marijuana could be legally sold in states, counties, and municipalities where it wasn't expressively prohibited by local law; even so, federal law placed it under much the same restraints as liquor. It could only be distributed and sold by licensed retailers, couldn't be legally purchased by anyone under the age of 21, and couldn't be sold through automatic vending machines. Federal and state taxes chased the price of a pack of 20 marijuana cigarettes up to 30 dollars in some areas. The law banned its use by military and civil-service employees, and allowed private companies to mandate drug tests on a discretionary basis; it also allowed law enforcement agencies to automat-

ically revoke the licenses of anyone suspected of driving, flying, or otherwise operating heavy machinery while under the influence.

The new law yielded mixed results. Many people who had been curious about marijuana tried it for the first time, and thus marijuana use soared for a couple of years. Then, much to the surprise of those who had predicted social anarchy, it plummeted just as dramatically. Many people just didn't like its effects, or they found beer was cheaper. Many who liked marijuana quit once they discovered that it could cost them their jobs; in many occupations, passing a urine or hair-analysis test became as necessary as having a high-school diploma. Those who persisted soon discovered that marijuana, much like tobacco or alcohol, carried its own social stigma. Good dates don't show up at the door with bloodshot eyes; a gentleman or lady doesn't suddenly forget your name before a goodnight kiss. "Are you stoned or just stupid?" turned out to be a much better put-down than "Just say no."

On the other hand, there were positive effects. Cancer, AIDS, and glaucoma patients found their symptoms easier to tolerate, and some reported their illnesses going into remission; as a result, medical labs were able to switch their attention to discovering permanent cures.

The price of paper dropped. Thousands of new magazines were launched, and millions of new books put in print, once publishers were no longer dependent on new or recycled wood pulp; for the first time in years, it became possible to buy a newspaper for 15 cents, a magazine for 75 cents, or a paperback for a buck. Stephen King was so happy, he published four new novels in one year.

Old-growth forests, and everything that lived in them, were left alone. Owls and eagles were soon taken off endangered species list. Clear-cutting became a travesty of the past when even the chopsticks in Chinese restaurants became made out of hemp fiber. Less acreage was being devoted to cultivating feedstock for farm animals; this in turn meant that more food was able to be grown at less expense and with less ecological impact. Greenpeace went back to saving whales.

So forth and so on. To be sure, the world's problems weren't solved overnight because of an ugly weed. Yet they became a bit easier to handle, and when the 21st century finally arrived, everyone was a little more happy, the future a little more bright.

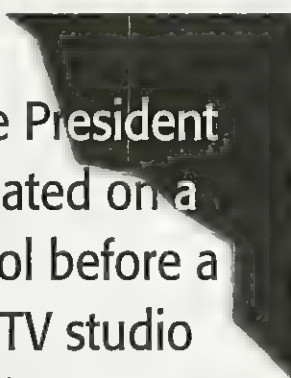
And the best was still to come . . .

AS SHE DOES EVERY MORNING, LOUISE Pullman starts the day with a stroll through the greenhouse, not so much to check the crop as to admire her handiwork. Like her father and grandfather before her, Louise is a hemp farmer, and she's proud of her heritage.

First she looks in on the baby plants whose seeds were removed from the incubator and planted on the greenhouse's east side a couple of weeks ago. Snug in moist beds of compost and mulch, their tiny leaves regularly spritzed by the irrigation pipes above their raised tables, the sprouts are coming along nicely. Louise checks the automatic timer to make sure that the sprouts aren't receiving too much water, then moves on.

Next are the more mature plants, each about four feet high, planted tightly together so that they'll produce strong, fibrous stalks as they grow taller beneath the fluorescent infrared lamps suspended from the ceiling. Like most of the cannabis being cultivated in the greenhouse, these plants are mainly males with only one female planted every four feet or so. Louise steps off the pathway to gently push through the

Continued on page 89



The President
seated on a
stool before a
MTV studio
audience: "If I
had a second
chance, I
probably
would have
inhaled..."

DEFROSTING

Illustration by John Berkey

By Daniel H. Jeffers

THE COOK SET OUT THREE types of omelet, bacon and sausage, fresh fruit, rolls, and a big urn filled with steaming coffee. But the Captain was still in defrost, and nobody dared eat before he arrived. The wardroom was starting to fill with hungry, recently defrosted officers, and the chatter delicately shifted over to why the Captain was slow this time.

The food stayed untouched. Coffee was OK, but it went down hard if your stomach had been frozen and empty for the past four years. There was a lethargy of spirit when coming out of cryo that got worse every time. The Captain had been in and out often. The junior officers could only imagine how deep his ennui ran.



Traveling through the vast reaches
the inhabitants of the generational

THE CAPTAIN



of deep space as they sought a new world,
starship knew but one emotion—hunger!

BERKELEY

Bragg Porba drank a full two cups of coffee, however. Then he snuck out of the wardroom. There would be an announcement when the Captain finally emerged, which Bragg suspected wouldn't be for a while yet. In the meantime, he had two Twinkies that had been sitting in his locker for the past four years. He'd been frozen, and it was illegal to store food while you were in cryo. Twinkies were indestructible, though. They were fine and tasted like when you were a kid. Now, however, Bragg felt twice as hungry. That was lunch, though, except for water. That was also dinner.

Bragg sat in the wardroom for a couple of hours on the second morning, hoping. Three other officers joined him. For an hour, they chatted as if in good spirits. The rest of the officers must have been waiting for some sign of food before climbing out of the sack.

"I think I hit the braking pool," Wandra Beriggon said. If the *Turnpoint VII* started braking soon, she would win some money. That wasn't going to bring breakfast any closer, however.

"Not if we hit the Oort cloud before the Captain wakes up," Cracker Plankson said. There would be no engine braking until the Captain signed. She was only a winner if they started their braking maneuver in the Pladget system. Outside the local Oort cloud, nobody won. Bragg considered mentioning that they would waste a lot of energy braking if they missed using the gravitation field of the Pladget system. Speaking about maneuvering without the Captain present was a little risqué, however.

"I heard the enlisted had pheasant-piarra for dinner last night," Wandra said. That was a tasteless comment, Bragg thought. The eggs had been sitting on the warmer over 24 hours now.

"Did you guys defrost OK?" he asked. Wandra nodded her head.

"I always have an ache in my hip joint," Cracker said.

"That's because you don't stretch before you go cryo," Wandra said.

Suddenly Bragg wondered if they were lovers. Against protocol, fraternization between officers. That was why they had nonfrozen passengers. But the cryo-less passengers aged in real time.

His girlfriend of the past several maneuvers was now 15 years his senior. She had a daughter, but he feared the girl might be his. Besides, he was too hungry to think about sex.

Who would know if they each took a roll? A protocol breach might not be punished, but it could end your career if people talked about it.

THE *TURNPOINT VII* WAS 680 FEET LONG AND 250 ABEAM. SEVEN DECKS were livable, besides the access engineering deck. The officers and crew used the upper two decks and were the only people allowed into the engineering sections. Much of the space was filled with cargo, but that still left plenty room for nonfrozen passengers.

The real, paying passengers stayed in deep freeze the whole trip. Basically cargo. Nonfrozen passengers could not afford deep freeze. They were allowed to ride, to perform services for the regulars, even to have children. They would never see the new planet, but their children might.

One fourth of the enlisted crew was out of deep freeze at any time. Only one officer was required to be out of deep freeze, the officer of the deck. However, when maneuvers were anticipated, everybody got rolled out of the sack.

Bragg envied the watch officer. The officer of the deck always received private kitchen service, and nobody would think to stop it just because the wardroom was active. Thinking the man might have some leftover food, Bragg dropped in to pay his respects. Another officer, Chwuppa Soo, was just leaving.

Chwuppa had a crumb on his lip.

Bragg knocked on Ensign Go-Tree's door. They didn't use military titles anymore, except to point out that certain members had not advanced at all. Ensign Go-Tree was still an ensign although they were half-way through a 50-year transit.

The ensign opened his stateroom door, not looking at all subordinate. He looked well fed. To be fair, many promotions were probably lost in the void. Transmissions were usually long, hard to pick up, and full of irrelevant detail. Matching relative acceleration was difficult. The messages that failed to transfer were usually for names at the beginning or near the end of the roster.

Bragg glanced around the smiling face of the man he'd bested at poker just four years ago. No food was laying around on the tables. It wasn't polite to just ask what the man had stashed away, so he was going to have to sit and chat.

"Any interesting transit stories?" he asked. He already knew the Ensign's political views, literary tastes, religious inclinations, and had heard a synopsis of every movie the ensign remembered seeing. The only other topic was the doings of the passengers which, in view of the normal relationship between officers and passengers, was considered indelicate.

"Well, I saw three comets coming through the Oort cloud," Ensign Go-Tree began, "the first was a classic Leontica comet ..."

The description of comets went on for some minutes, until Bragg's stomach made a very loud noise.

There was a moment of silence, then Bragg made an apologetic gesture.

"Oh, I understand," Go-Tree said. Although he clearly looked embarrassed. He made no offer of food. The silence stretched on, until Bragg felt the social pressure was on him to leave.

"Oh, I suppose I should see how the Captain is coming," he said, without rising, "though one does like to know how the passengers fare."

If Go-Tree thought the question impertinent, he could claim he merely was asking about the paying passengers on ice. He sat there, trying to keep his eyes off Go-Tree's little refrigeration unit. Waiting to be dismissed by this junior officer.

"Well," Go-Tree started again, "they are apparently dividing generationally again. The ones who expect to see planet-fall are busily learning all the homesteading skills and acting all uppity toward the ones who'll likely be too old or too dead to transition down to the surface."

"Really," Bragg asked, thinking that if Go-Tree excused himself to the restroom or something, it would only take a moment to check out the fridge. "Do go on."

Go-Tree looked surprised, as if he had already finished speaking on the topic. He flushed a little, but it was too late to act offended.

"Um, the older group acts uppity because they can remember life on Earth. So you have the Earth-leaning people, and the new-planet group. I guess that Trianni Goldfin is probably on the old Earth-memory group," he said. Trianni was Bragg's girlfriend during the past few maneuvering periods, starting back when she was 12 years his junior. Now she was 15 years his senior and had a daughter, likely his, who was maybe 21. Bragg was physically 27.

Silence erupted again, this time lingering as Bragg was unable to think of a plausible topic. He noticed Go-Tree looked uncomfortable. They'd never been friendly, but he considered making some kind of good-natured joke. Nothing came to mind.

Social pressure finally outweighed his hunger, and Bragg got up to leave. He made a note to himself to never offer food to Go-Tree if the situation were ever reversed.

"Thanks for dropping in, it was really a pleasure," Go-Tree said.

"The pleasure was all mine, surely," he said.

THAT NIGHT, AS DEFINED BY THE EARTH-standard life-control computer, Bragg Porba tossed too much to sleep at all. He dreamed of food. In the first dream, he lifted the silver cover off the wardroom server, when a flash carbonized the eggs and sausage as he watched. In the second dream, he was scraping the carbonized eggs off the pan when the other officers came into the wardroom. He suddenly realized he was wearing just his undershorts. Nonregulation undershorts.

When he woke enough to realize who and where he was, he decided it was time to get up and ramble around his little cabin. The bed took up half the space, but that was fine because the bed could wrap you in warm gel and scrub your body. It deserved space.

One wall was taken up with the traditional roll-top desk and writing supplies. The romance of space dictated that adventurers keep handwritten diaries in the old style. Like almost everyone else, Bragg would wait until they ended the voyage in high-orbit, then go back and make up stuff from the video-log.

The starboard wall was filled with official equipment, panels, and status boards that made him a virtual extension of the collective control room. At present, the only board active was his vid-mail screen. It was blinking at that frenzied rate that meant lots of messages.

"Show info," he said.

The screen lit up with the faces found in each message, along with a caption of sampled text. Ten calls from Trianni, seven from her daughter, Jujuga Porba. So she was using his name.

Officer wake-ups were never announced, but you couldn't really keep secrets this deep in space. Trianni had started calling while he was still cycling out of cryo. Each message ran for several minutes.

FRESH OUT OF DEEP FREEZE, BRAGG HAD MADE A resolution. Now hunger ate at his determination. Breaking up with Trianni was long overdue. They weren't living the same kind of life; he was closer to his own daughter in age. The things he longed to talk about meant nothing to her. Her long rambling memories of Earth seemed maudlin to him.

"Show messages with dinner invitations," he said.

The screen shifted, and only five images remained. Three of Trianni, two of Jujuga.

"Play messages from Jujuga," he said.

Both messages were polite, "hope to see you at mother's for dinner." No independent offer, no directions.

Could he, in good conscience, accept dinner knowing that he would soon break up with Trianni? It wasn't really in keeping with being an officer and a gentleman. If a passenger fed you dinner, you were obliged to be friendly. And responsive.

He understood that the passengers had limited resources. Trianni would use up many favors to prepare a meal in her own apartment. It was not a light gesture.

Suddenly the security alarm overrode his personal use of the panel. He was watching monitors that showed the Captain's status and controlled security devices accessing the corridors on the command deck.

Somebody was trying to kill the man. Bragg, even in his nearly starved state, enjoyed dropping into actual ship operations. He quickly ferreted out the data fingers that contested his control and located the intruder.

A fellow officer.

He had her sealed at the front of the defrost unit, ready to immobilize her, when his private screen lit up to show her face. It was Wandra Beriggon.

"Let me through, Bragg," she said. Her face was gaunt, desperate. "If the Captain dies, we can eat breakfast." He figured he was two Twinkies ahead of her.

Bragg's hand rested over the track-ball that would direct the nano-stunners into her location. If he just screwed up, he didn't even have to really go along. A starved man could make a mistake, hesitate a little too long; it would still be Wandra's fault. Even as he thought this out, his hand worked over the ball, unable to find a quick way to do it wrong. The nano-bots flooded into the room where Wandra had nearly broken into the Captain's defrost controller. Bragg was a hero.

BRAGG PORBA SHOWED UP FOR DINNER AT 7:30. IT WASN'T READY. AS far as he could tell, there was no food in the house. No smell of cooking; no empty boxes with crumbs; not an appetizer; not even a drink offer. Except water.

"So, we're eating out?" he joked. There were no common dining facilities. The enlisted had their mess deck, the officers their ward-room. The passengers had communally owned cooking equipment, which they rented, borrowed, or shared.

"Your daughter is cooking. She'll bring the food over later, after we've had a chance to talk," Trianni said. She was attractive for 40-something. In some ways, more attractive than last time he'd been out of storage. But, still. She was taller than he was by an inch, she had long black hair and an athletic figure. Still, the passenger section was brimming with women of the next generation.

"I can't be very entertaining, having been in deep freeze for the past four years," he pointed out.

She smiled, put her hand up and scratched his chest. He leaned forward to kiss her, but pulled up to buss her forehead. She dropped her head slightly. He could not read her expression.

"But I'm always ready to talk," he added. Her hand found his, somehow, and she was leading him to the couch.

He thought he sat a comfortable distance away, but somehow she was snuggled next to him, leg over his leg. His stomach growled. Maybe sex this time, he thought. In a few years he'd wake again, she'd understand by then.

"Jujuga wants to get married," she said. How old was his daughter? Twenty-one or so; who got married at 21?

"Well," he paused, wondering how much fathering he could possibly do. Why fake it when everyone knew he'd be in deep freeze again shortly? Odds were he'd be frozen for the ceremony.

"Um," he started again, "is the boy nice?"

"Very nice, I've already approved," she said. That didn't seem to be what she wanted. His stomach had collapsed to the point where he almost feared eating now. His arms were weak. He didn't have the energy to fend off her affectionate caresses.

"Of course, these kids, they're looking forward to colonizing a whole planet. They have more morals, more discipline than we old cast-offs have," she said. He tried to formulate a protest, but couldn't come up with enough sincerity to keep from being patronizing.

"Well, I'm sure it's all to the good," he said.

"She wants to clean up her past," she said. He didn't know much about his daughter. It wasn't really his fault; he'd been in deep freeze most of her life.

"What has she done?" he asked, then regretted asking, thinking it might be personal. When she answered, he found a different kind of regret.

"Her parents aren't married," she said. Her hand brushed up into his hair. She really was beautiful. For how much longer?

"Surely they understand relationships between officers and passengers," he said. Tradition and all.

"Other people have done it. She's much more desirable with an acknowledged family tree and caring parents. Her boyfriend is of that class," she said.

Should he feel guilty? Trianni had never complained, always seemed to like their little romance. Now what?

Then it hit him. She was sitting there, right now, staring into his confused eyes, waiting for him to propose. To make her an honest woman. They could make their daughter "of that class."

He had little strength left, not enough to discuss or argue. Barely enough to stand. "I'm sorry," she said, face down. He was standing, watching her shoulders, trying to decide if she were crying.

Dinner was probably out of the question.

AN OLD OFFICER'S MANUAL HAD THIS TO SAY ABOUT ENLISTED PERSONNEL: "enlisted men are stupid, but extremely cunning and bear close watching at all times." The starship service specifically disavowed this attitude. However, fraternization was strongly discouraged. The enlisted ran much of the routine, and they knew the physical ins and outs better than the officers.

But the culture was different. Enlisted people were up for a quarter of the total voyage. They could only make a few journeys before

Continued on page 88

WHIMSICAL AND SURREAL is the art—and, at times, life—of artist Don Ivan Punchatz. Here is a man who not only named his son for the giant cockroach in Franz Kafka's "Metamorphosis," but honored that same son's wishes when a beloved pet died, and gave Farrah the Red Tarantula a Viking funeral replete with burning boat.

Hip, irreverent, and wildly imaginative, Punchatz has been painting, designing, illustrating, and inspiring other artists for over 30 years.

He's always enjoyed pushing the limits of what is permissible—and realistic—in his imagery. As a result he's received more awards than there's room here to list, including Grandmaster in 1996 from the Spectrum annual of fantastic art, and honors from the Society of Illustrators and the Art Directors' Clubs of both New York and Los Angeles, respectively. His book jacket art is inextricably connected to science fiction writers of the 1960s, among them Asimov, Ellison, Farmer, and Silverberg.

Punchatz rode the "New Wave" of SF, incorporating surreal and erotic touches in

Among the artist's favorite paintings from this time were the covers for Isaac Asimov's Foundation series, Robert Silverberg's *Man in the Maze*, Harlan Ellison's "Repent, Harlequin," Philip Jose Farmer's Riverworld series, and Brian Aldiss's *Cryptozoic*. Unfortunately, many of the original paintings for these covers were never returned by the art directors and are now considered lost.

Punchatz's work from this time has been characterized as "stylized primitivism." The artist amends that, saying, "It was a genuine primitivism. I selected it for its monumental simple forms because I didn't know how to paint photorealistically. I would read the manuscripts and then attempt to interpret them in some surrealist manner."

In addition to book jackets, Punchatz's work has appeared in *Esquire*, *McCall's*, *Penthouse*, *Time*, *Playboy*, *National Geographic*, *Newsweek*, and *National Lampoon* magazines; as the cover of the top-selling computer game *DOOM*; as record album covers for artists such as Tomita; and as greeting cards, posters, trading cards, and national advertisements.

A cover portrait that Punchatz painted is in the permanent collection

THE SCIENCE FICTION METAMORPHOSIS OF DANGEROUS VISIONARY DON IVAN PUNCHATZ.

RIDER OF THE

his distinctive work that evoked, by turns, M.C. Escher, Hieronymous Bosch, German Expressionism, and Neoclassical Architecture. It also led to a certain amount of censorship.

"I did a painting that was used for the cover of *Dangerous Visions*," the artist says.

"It was a multipaneled work, and the bottom panel had some suggestive imagery—tame now—but they removed that panel for the book. I think they censored it. I was using Jungian/ Freudian erotic imagery in my personal work, and it kind of snuck into my sf painting." (The entire painting, "Narcisseros," eventually appeared in *Omni Magazine*.)

of the Smithsonian Institution's National Portrait Gallery. Other Punchatz paintings are in the Museum of Surreal and Fantastique in New York, The Butler Museum of Art in Ohio, the Dallas Museum, the Palace of Fine Art in Mexico City, and the George Eastman house in Rochester, New York.

Perhaps his most far-reaching legacy results from his days as teacher/mentor at Sketchpad Studio, a professional illustration business he set up in Texas through which he

BY KAREN HABER



Below: Punchatz
has represented
Science Fiction not
only on the covers of
the genre's finest
books and maga-
zines, but also on the
covers mainstream
publications such as
Boy's Life.

NEW

WAVE





hired—and inspired—a new generation of graphic artists.

How did the youngest child of immigrants, who had little time for cartoons, transmogrify into—as one Sketchpad Studio alumnus described him—“the imperial, majestic studio chair ... ever powerful, dragon and monster renderer ... knight of nights ... giver of paychecks”?

Punchatz puts most of the blame on science fiction and comic books. “I was the weird little brother who always read comic books, sketched, and drew. My mother didn’t see how I could ever earn a living drawing those ‘marionettes.’ But my much-older siblings—one sister in particular—encouraged me and gave me paints.

WAS A SCIENCE FICTION READER from way back. Loved Ray Bradbury. But my primary inspiration was comics. E. C. comics. I was very influenced by comics and I had a very unusual source of comic books as a child. A paper bag company in town received shipments of discarded magazines, waste paper, and comic books. All the boys would run down to the plant after school to try and cadge the unwanted comic books. I would come home with piles of ‘em.

“So I was inundated with the graphic narrative. Writing was always kind of subordinated to the visuals. It even extended to my



schoolwork. I think I have a comic strip I did on the Spanish-American War back in the fourth grade just to avoid writing a report about it. And three years later, I did an eight-page comic strip on the assassination of Abraham Lincoln.”

Just out of high school he received a full three-year scholarship to the School of Visual Arts in New York City. “It was the greatest stroke of luck I ever received.”

There, under the tutelage of Tarzan-renderer Burne Hogarth among others, Punchatz was gently dissuaded from pursuing a career path that led directly into comic book illustration.

“Hogarth told me: ‘There’s a whole panorama of art for you to draw on.’ He’d be talking about Freud and Jung and philosophy, and we came there expecting to learn how to draw comic books. He was a very generous and giving person. A real inspiration. I stayed in touch with him.”

Fresh out of art school, Punchatz worked for commercial ad agencies and in art direction, supplementing his skills with evening courses at the Cooper Union School of Fine Arts.

A stint as a medical illustrator for the army relocated him to San Antonio. In early 1960, Punchatz began exhibiting his personal drawings, prints, and paintings at galleries in the Southwest and Northeast. A chance encounter led him to SF illustration.

“An agent bought one of my paintings in a show, then told me, ‘If you ever want to put together a portfolio, call me.’”

The agent’s name was Darwin Bahm. It was the beginning of a great professional and personal relationship that continues to this day.

“So I put together a very unorthodox portfolio of personal works with text overlaid, inspired by Kafka.”

Dell bought one of his paintings right out of his portfolio. An art director at *Collier’s* began to commission covers from Punchatz as soon as

Left:

Top:

Inset:



he saw his work. The rest is art history.

His style became more realistic in the 1980s, the result of health-and-industry-driven concerns: A bout with stomach cancer led him back to working with ad agencies, and that, in turn, required a more realistic approach in his painting. "I think my work suffered for this change. I still find myself drawn to artists who work with a more stylized imagery. And when I do work for myself, a lot of it kind of works back in that direction."

His professional work today is characterized by tight, heavily rendered stylized illustration. His personal work is looser, influenced by his "sense of mortality" and his beloved German expressionists.

Currently he's returned to the old-fashioned pen-and-ink look of his mentor, Burne Hogarth, with illustrations for *Journey to the*

thinkers. Rick Berry, for example, is one of the new masters of the computer art

I DABBLED IN COMPUTER illustration in the late '80s but I didn't think that the work had what I could have given it by hand. I did learn Photoshop and produced a number of illustrations in that medium, and I'm still interested. In fact, my son, Greg, is a computer animator, and he gave me his old computer to fool around with."

Now, with enough accolades to fill a barn, Punchatz is finally fulfilling a lifelong fantasy:

Center of the Earth, a book tied in to the *Wishbone* TV series. "There are so few worries. No airbrush fumes or worrying that my program's gonna crash. The only risk is that I might drop the pen."

However, he's not afraid of computers. "They're just another tool. What I see is that the people who seem to do the best work with them have really good drawing skills and they're good

He's doing a comic strip for *Boys' Life*, a magazine published by Boy Scouts of America. "It's very satisfying. I design everything from the logo on down, and do it all in watercolor."

In addition to the comic strip, Punchatz keeps up his sketchbooks and personal work. "Drawing is my greatest pleasure. I do it as often as possible." Texas Christian University, where he currently teaches, will have a retrospective exhibit of his work in February 1999.

Does the "ever powerful monster and dragon-renderer" have any advice for young artists?

"Look at how shapes interrelate and integrate with each other. The Betty Edwards book, *Drawing on the Right Side of the Brain*, really hits the nail on the head. It teaches you how to see on a two-dimensional plane.

"To paraphrase the lyrics of the group, Chumbawumba, 'You'll get knocked down, you'll get up and you'll never let 'em keep you down.' Perseverance in achieving your goals whatever they may be, seems to be the only

sage advice I can offer, other than joining the graphic artists' guild and learning about the business aspects of your craft."

Above:

Inset:

Opposite:



MCANDREW OUT OF FOCUS

Continued from page 38

you, Jeanie. Suppose that you are in trouble, and you can only send out a distress signal now and again."

"Once every year or two, they said."

"Right. Now, you're way out in deep space. Where would you beam the signal?"

"Where people were most likely to hear it. Back toward the Sun."

"Indeed you would. But if you're a long way out, and the signal is weak, chances are no one will hear you. Unless there's some way you can amplify the signal, or you can focus it."

I'm no McAndrew, but I'm not an idiot. I almost had it. "A signal, sent back toward the Sun—a radio signal. That would be focused just the way that a light beam is focused. But what Paul Fogarty heard wasn't at the solar focus."

"No more it was. You've had courses in optics, Jeanie, you must have. The Sun acts like a lens, one that takes a beam of light that comes from infinity and converges it to a focus at 82 billion kilometers. Now suppose you have a radio signal, but instead of focusing at 82 billion kilometers from the Sun, it focuses itself at 280 billion kilometers. Where would the origin of the radio signal have to be, to make that happen?"

"On the other side of the Sun from where you receive it." I tried to recall the relevant formula—and failed. I said, "How far out? It's a standard result in geometrical optics"

"It certainly is. If a lens converges a parallel beam of light at a distance F from the lens, then light starting at a distance S from the lens will be converged at a distance D beyond it, where the reciprocal of S plus the reciprocal of D equals the reciprocal of F ."

"Don't gibber at me, McAndrew. I asked you a question. How far out?"

"You're not listening, Jeanie." The wretch went on regardless, probably imagining that he was speaking English. "Take F as 82 billion, and D as 280 billion—that's where Paul

Fogarty caught the distress signal—and you find that S , the distance from Sol where the signal originated, is a 117 billion kilometers from Sol. That's where the distress signal came from, the other side."

"The other side of what?" As usual, he was turning my head into a muddled mess.

"Of the Sun—the signal was generated on the opposite side of the Sun."

"You mean Fogarty and Geoffrey Benton have been searching in the wrong place?"

"Of course they have. Completely wrong." But there it was again, the curious tone in his voice when he said Benton's name. And with it, a strange sideways look at me.

Even at a hundred gees acceleration, we were going to be on the way in the *Merganser* for over a week. Too long to live with seething undercurrents of feeling.

"Mac, what is it with you and Geoffrey Benton? Surely you hardly know the man."

"I guess I don't. Not the way you do."

"And what's that supposed to mean? I've never even met him."

He stared pop-eyed at me. "How can you say that? He's the AG News man who flew with you back from the Titan prison colony—just the two of you."

I groaned inside. A 15-year-ago fling, coming back to haunt me. "That wasn't Geoffrey Benton."

"But he works for AG News."

"So do ten thousand other people. Mac, what on earth gave you the idea that it was Benton?"

"Paul told me." McAndrew put a hand to his balding forehead. "It wasn't Benton? My God. Do you know what I did? Do you know what I called him?"

"I know exactly what you did, and I can imagine what you told poor Benton. More than that, I know what Paul Fogarty did."

"But why would Paul ... he wanted to make the trip to the solar focus as bad as I did."

"Worse than you did. Mac, don't be dense. Fogarty wanted to make the trip all right. And he's making it—without you. You're older and you out-rank him. You'd have been the leader. Now, he keeps any credit for himself."

"Paul? Do a thing like that. I don't believe it."

But he did. He went silent for hours, cracking his finger joints in the way that I hated and looking sideways out of the ship at the Eldritch plume of glowing plasma that trailed away behind us.

And me? I ought not to say it, but I was rather pleased. I mean, McAndrew had been jealous, jealous of someone I hadn't much liked at the time and hadn't seen or heard of in 15 years. I thought that was rather sweet.

No, it's not quite the same as fine jewels or bouquets of flowers. But once you forget about his being a genius, McAndrew's a simple man. When it comes to compliments I settle for what I can get.

MCANDREW HAD KNOWN THAT SEVERAL of the arks had been launched far north of the ecliptic when he played me Fogarty's message. He did the background research before we left, and it was all in the *Merganser's* data banks.

I sifted through the material one morning, while McAndrew sat in a habitual stupor of advanced physics and the ship raced out toward the fiery point of the Cassiopeia supernova. The Sun had already shrunk behind us to a point of light and although we were crowding light-speed we didn't seem to be moving.

There had been 17 arks, but only four of them were candidates for what we were seeking. Each of them was different and distinctive. You might expect that. Any group of people that decides to leave the rest of humanity and head off on a one-way trip to the stars is likely to be a little odd.

The *Ark of the Evangelist* had set out to spread its version of the Word of God among the stars. It contained four thousand followers of the philosopher Socinus, which was probably all of them. The Word, from what I could see of it in the database, was likely to baffle any alien who encountered it. Certainly, the Word baffled me.

The *Ark of the Evangelist* was equipped with unusually powerful communications equipment, able to beam messages ahead so that their ultimate arrival at another stellar system would be expected. The same equipment would, of course, also be able to send messages

*Their ark, more
than any other,
had been designed
to survive
and operate
using minimal
resources.*

back toward Sol. None had ever been received, unless Paul Fogarty had picked up the first.

The *Cyber Ark* had no interest in evangelism. It had headed out toward Cassiopeia, but any direction would have done equally well. The ark held two thousand computer specialists and the most advanced computing equipment that the solar system could produce. The ark's inhabitants were united in their disdain for the rules that limited the development of machine intelligence. They had vowed to produce real artificial intelligence, a true AI, and they claimed to know exactly how to do it. Their goal was an AI far beyond the known limits of either humans or machines. If they felt in a generous mood when they were done, well, they just might tell Earth when the work was finished.

Big talk. But if they had been successful, they had sent back no word in the 59 years since they flew away from the solar system.

Then there was the *Ark of Noah*. Its colonists had become convinced from their analysis of ancient religious writings that Armageddon and the end of Earth were close at hand. They had no faith in the survival of the colonies we had established on Mars, Titan, or Ceres. Inside the two-kilometer sphere of their ark, formed from a hollowed-out asteroid, they had tried to include a pair of every Earth species of plant and animal. Impossible, in practice—we were up to four million species of insects, and still counting. But the *Ark of Noah* gave it a good, all-out try, packing in a handful of every life form they could find. They took liberties with the number of humans, two hundred instead of Noah's single family; but somebody had to manage the ark's life-support systems, if and when things went out of whack.

My own money was on the *Amish Ark*. When a group that shuns most forms of mechanical systems sets off into the void in as fundamentally hi-tech a structure as an artificial world, integration problems and equipment failures loom large as a source of possible trouble. The surprise was that the ark had gone as far out as it had without killing everybody on board. The passengers—eight thousand of them at take-off from Earth orbit, according to the roster—had been lucky to be able to send their weak call for help. Apparently they also didn't know much about electronic signaling. Otherwise they'd have realized that only someone close to the ark, or at a solar focus where the strength of any message was gravitationally concentrated, could possibly have heard them.

Of course, we were listening for a direct signal now, with the most sensitive equipment we had been able to place on board the *Merganser*. We knew the general direction of the lost ark, and an approximate distance; but we might well be off a few hundred million kilometers, one way or the other.

After we came to our best estimate of the origin of the signal, we spent the next few days moving position, listening, and moving again. Nothing. I began to be discouraged. Not so McAndrew.

"Jeanie," he said, "the chain of logic that led us here is clear and unbreakable. Keep looking, and we'll find an ark."

"The *Amish*."

"You're the one saying that, not me. But whichever ark it is, once we find it we'll be able to tell them that help is on the way."

I was glad to hear him put it like that. Director Rumford couldn't have been more explicit in our final meeting before we left the institute.

"I'm approving the flight of the *Merganser* as an exploration mission," he had said. "That's the most I can do, because the institute has no responsibility for search-and-rescue operations. I think you have a long shot—a very long shot—at finding someone in trouble. But remember that you are not a rescue party. There are only the two of you, in a small ship without special equipment. You are not trained for space rescue. If you find someone out there in trouble, call me and come back here. No heroics. No attempts at inspired space-engineering solutions. Leave that work to the specialists. Understand?"

"Of course." McAndrew had agreed instantly, but I knew the man. He was itching to be on his way, and to get Rumford's consent for the mission he'd have said anything.

Now, with the ark possibly no more than a few hours ahead, I was glad to hear him proposing talk rather than action.

Just to be sure, I rubbed in Director Rumford's order one more time. "The colonists don't seem to be in any great hurry for help, if they send only one message a year. A good thing, too—we have no room on *Merganser* for anyone else. If it comes to an all-up rescue mission, the United Space Federation will fly a whole fleet out this way."

As I said that, I was secretly convinced that our whole journey would prove a waste of time. Before we left the institute we had installed a loud signaling system on the *Merganser*, and for the past two days we had blared word of our presence and our location into the empty sky ahead of us.

Result: Nothing.

The people on the ark were deaf, or their receiving equipment was out of action; or maybe the ark was over on the other side of the Sun, hundreds of billions of kilometers away, wandering around where Paul Fogarty had picked up the original signal.

We had reduced speed and turned off the balanced drive. At my insistence we had also switched off every possible source of electronic noise and were gliding forward through the void like a dead ship.

It was as well that we were so silent. Even with our electronic ears wide open, the Mayday signal that came in was barely above threshold. It was also well off to one side.

"That's it!" Our receiving system automatically tuned to the direction of the source, and now McAndrew increased the gain to maximum. It didn't help. Instead of a faint voice almost lost in white noise, we heard a loud voice equally unintelligible amid a thunderstorm of static.

"... receiving—input... signal ... assistance—urgent ... And then, the first direct evidence that they had heard us. ... send ...who you ..."

"I have direction and distance," I said. "Three-twenty-one million kilometers. Send a signal saying that we hear them. Tell them who we are, say we are on the way. Tell them they'll hear nothing more from us for a while—we can't send when the drive is on."

"Aye." McAndrew was peering uselessly out of the observation port, as though he might catch a glimpse of something hundreds of millions of kilometers off in the distance. "Looks like things are going worse for them, they say it's urgent. Let's see, 321 million. Can the *Merganser* beat a 110 gees?"

"Not with me on board it can't. We keep it safe, Mac—we don't want anyone having to come and rescue us."

He scowled, but finally he said, "Fair enough." I don't know if he did the arithmetic in real time, or if he had stored in his head some kind of table of time against distance and acceleration, but he went on at once, "I'll tell them we'll be there in 10 hours. That will give us 25 minutes for turnover before we start to decelerate. Should be ample. Set it up, Jeanie."

I had to make one more decision before I could program the drive. What should we assume about target motion? If it was an ark, how was it moving?

I worried for a few seconds, then decided that it didn't matter. If the ark were in free-fall toward the Sun, or if it were in stable orbit around it, that made little difference. The speed would be no more than about a kilometer a second. We could fine-tune for that at the end, in a minute or two of accelerated flight.

As soon as McAndrew had sent our message we were on the way. We settled in for a few hours of rest and a quiet gloat. In spite of my warning that this wasn't a rescue mission, I must admit that I was feeling cocky. We had flown out blind, far from the Sun to where no one but McAndrew had thought of looking. And against all the odds we had found a lost ark.

A little feeling of self-satisfaction seemed to be in order.

ASTEROIDS ARE THE WAY THAT SNOWFLAKES ARE SAID TO BE, NO TWO the same. I can't speak for snowflakes, because I've only seen snow twice in my life. But I can vouch for the variability of asteroids. They come in all sizes and every imaginable shape.

That, of course, presents problems to any self-respecting engineer. Ordinary ships can be grown on an assembly line to a common template, a hundred or a thousand of them identical. Asteroids are a wilderness of single instances. Faced with the conversion of an asteroid to a space habitat, an engineer can only standardize so far.

All the arks had begun life as asteroids roughly spherical and roughly two kilometers in diameter. Hollowing out their interiors and extracting useful metals and minerals followed a standard procedure. At that point, however, the paths for the creation of individual arks diverged. Thickness of external walls, size and type of interior structures, on-board life forms, mineral reserves, illumination, hydroponics, computer controls, communication antennas, lifeboats, all had to be designed to order. Which was just as well, because small animals and bugs acceptable to—even required by—the *Ark of Noah* would be considered disgusting vermin by the *Cyber Ark* or the *Ark of the Evangelist*. On the other hand, the *Cyber Ark* wanted computing equipment involved in everything, while the *Amish Ark* would have been happy with no computers at all.

Except for the communication antennas, none of these differences showed on the outside. McAndrew and I knew that, but all the same we peered curiously at our display screens as the object ahead of the *Merganser* grew steadily from a tiny point of light almost lost against the background of stars, to a defined disk, and finally to a lumpy Christmas ornament adorned with the bright spikes and knobs of gantries, antennas, thrusters, exit locks, lifeboat davits, space pinnaces, and docking stations.

"This is the *Merganser*, at 18 kilometers and closing." I sent the signal, wondering why the ark ahead had stopped broadcasting its Mayday. "Are you receiving us?"

I hardly expected an answer, so the woman's voice that replied within seconds was a surprise.

"We are—receiving—your messages," she said. Her speech was jerky, as though she was hard-pressed to force out each word. "We need your—assistance. Urgently. Approach—this world—and—come aboard."

McAndrew leaned across and turned off the microphone. "Damn it, Jeanie, what are we going to do? They think we can help them, and we can't. This ship doesn't have the resources."

"We knew that before we started," I said. "Mac, the only thing we can do is find out what's wrong, and send a message back to Director Rumford. He'll have to take it from there."

I turned the microphone back on. "The *Merganser* is a small experimental ship. We can't do much to help. What sort of assistance do you need?"

The woman said again, just as though she had not heard me, "We need—your—urgent assistance. Approach—and come aboard. An entry port is—already—open. Proceed through to the—interior."

We had been closing steadily as we spoke until the ark loomed to fill the sky ahead. The blue-white glare of the Cassiopeia supernova, far brighter in this location than our own diminished Sun, threw hard shadows on the external surface of the converted asteroid. I could see the trusses of each individual gantry and the latticework of the

robot arms that handled external cargo loads. An entry lock formed a dark well next to one giant manipulator.

I stopped the *Merganser* two kilometers short of the ark. "This is as far as we go."

"Jeanie!" He was outraged. "We can't find out what their trouble is unless they tell us, and they don't seem able to. We have to go inside. There's no possible danger. None of the arks had a weapons system."

"I know that." I wondered why I was feeling uneasy, and relented. After all, even if I were the captain this had been his idea and it was really his expedition. "All right. We can go closer if we use suits. But the ship stays here."

"Sure." McAndrew was already moving across to the locker. By the time I had sent word back to the institute giving our current location and status, he was suited up and in the air lock.

"Go slow, Mac," I said. "There's no hurry. Don't go outside without me!"

He took no notice. As I say, he has never learned the meaning of the word restraint. The airlock was cycling before I had my suit out of the locker.

I watched McAndrew as I removed my loose outer clothing and slipped the suit over my legs and lower body. He was outside, and moving toward the ark. I was glad to see how slowly he was taking it. I could be in my own suit, through the lock, and catch up with him well before he reached the ark.

In the final moment before I placed my suit helmet in position, I noticed something off toward the left-hand limb of the ark. It was

shaped like a crumpled and deformed space pinnace. Instead of hanging in the usual davits it sat between the metal jaws of a cargo manipulator.

"Mac, take a look on the ark at about 10 o'clock." I spoke over my suit's radio link. "See it? Looks like a lifeboat. Head over there, and I'll follow you."

I set the *Merganser* to hold position a steady two kilometers from the ark and headed for the airlock. It was long experience, not intelligence or sense of foreboding, that led me to tuck a power laser into a pocket on my suit. Once outside, I found myself doing what I had told McAndrew not to do—hurrying.

As I thought, it was a lifeboat. McAndrew turned as I came closer. I could not see his face behind the visor, but his voice was unsteady.

"Take a look through the ports, Jeanie. There's been a terrible accident here."

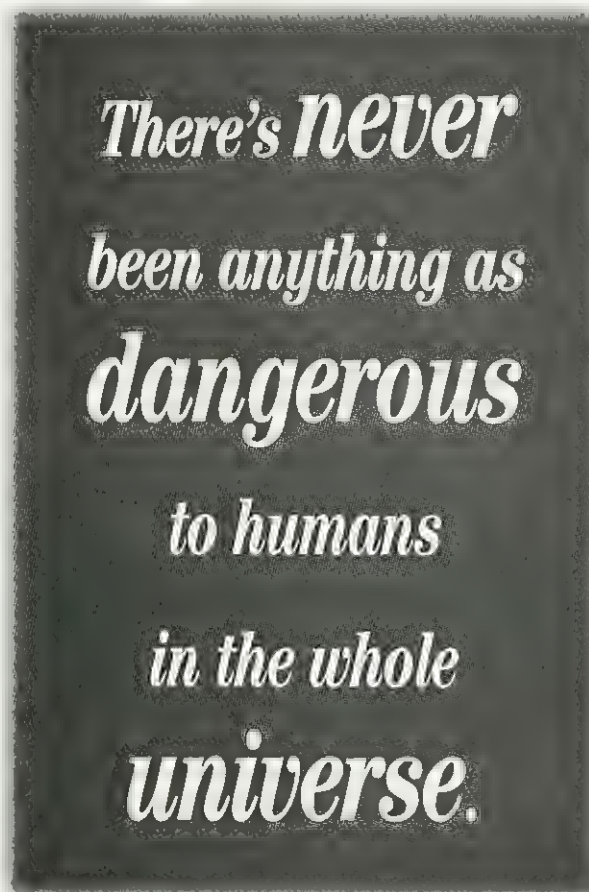
Rather than doing what he suggested I moved along to the middle of the lifeboat. It had been torn open by the jaws of the cargo manipulator, which still held it. I could enter the little ship through a great two-meter gash in the hull.

The bodies had been there for a long time; 28 of them, dry corpses desiccated by years of exposure to

vacuum. Not one had on a spacesuit.

"They must have been trying to go and get help," McAndrew muttered. He had entered the lifeboat right behind me. "They lost control before they were even on their way, and ran into the cargo manipulator."

"It looks that way." I was puzzled and disturbed. Even an inexperienced pilot would know not to turn on the engines until the lifeboat



had drifted well clear of the ark. Otherwise, you would endanger the ark as well as yourselves. Only the Amish, after a lifetime of shunning all modern mechanical devices, would make such a basic and fatal blunder.

But the Amish, more than anyone else, would not have abandoned the bodies of their dead. They would have recovered them and provided appropriate space burial. If they had not, that meant they could not. For many years—how old were those freeze-dried corpses?—the surviving Amish must have been confined to the body of the ark and unable to venture into space.

That had me equally confused. Every ark carried hundreds of spacesuits. If the Amish were not able to come outside, then how could McAndrew and I go in? Approach, the woman said, and come aboard. An entry port is already open. And it was. We had seen it, standing wide next to another of the manipulators.

McAndrew went on, "The accident was unlucky, and not just for them. It was unlucky for everyone else on the ark, too."

He was leaving the lifeboat and heading on toward the gaping lock. I followed, more slowly. A lifeboat was meant for use close to a planet. What dreadful danger would make you launch one so far away from any world, where the chance of survival was negligible? One basic question was unanswered, despite our questions to our female contact: What had gone wrong?

The Amish disdained some forms of technology, but they were hard-working and hard-headed people. Their ark, more than any other, had been designed to survive and operate using minimal resources. But more and more I had the feeling—a ridiculous feeling, given that I had talked to someone on the ark within the past hour—that the structure in front of me was a dead hulk.

McAndrew was already inside the lock, using his suit lights because the Cassiopeia supernova no longer provided illumination. Following, I saw that the inner door was also open. It suggested that the whole corridor beyond was airless.

I was watching McAndrew, otherwise I might not have caught it. On the wall of the corridor, above him and to his right, a small monitor camera began turning to track his movements. I switched my suit from local to general circuit. What I said would be picked up at the *Merganser*, and re-broadcast back to the ark.

"I see that you are following our progress. Where are you inside the ark? And what kind of trouble are you in?"

A moment of silence, and then the woman's voice again. "We need—assistance. Proceed as—you are—doing. The corridor will lead—you—to us."

No fluency. Instead, the strained precision and hesitations of someone speaking a foreign language. I looked around and up. I had noticed only one monitor camera, but now that I was seeking them I saw that they were everywhere on the walls and ceiling. Floor, walls, and ceiling also held pressure pads every few yards, to register any slight contact that might take place in the negligible gravity of the ark. Ahead of McAndrew, another door stood cracked open just a fraction. As he moved toward it, the hatch smoothly slid wide to reveal a chamber beyond as dark, airless, and empty as space itself.

Monitors everywhere; sophisticated sensors; doors keyed to open upon the detection of human presence. This was the very antithesis of an Amish world.

McAndrew had moved on, through into the next room. He turned, waiting for me to come through the hatch and join him.

I switched to local communication mode, hoping that the circuit would not easily be overheard and unscrambled.

"Mac," I said softly. "Don't take another step. I was wrong. This isn't the *Amish Ark*. It's the *Cyber Ark*. They created their AI, and the damned thing is running the show."

McAndrew stood dead still. I knew that he had understood exactly what I said—he's quicker than me on the uptake on any scale that I can devise—but he seemed unsure what to do next.

I said, more urgently, "Don't act alarmed. Just come back this way. As slowly as you can stand to."

It was too late. Either the AI read the significance of his movement toward me, or a massive intelligence had received our first trans-

missions and cracked the compression code used in suit communications. The reason did not matter. What did matter was that the hatch began to slide closed as McAndrew hurried toward it.

There was a control panel on my side of the hatch, but I didn't trust it. The AI might have an override. I dragged the power laser from my pocket and aimed high, where the upper edge of the hatch met the wall.

There was a lurid sputter of sparks and a vibration that I felt in the soles of my suited feet. The hatch, welded to the wall, ground to a stop and McAndrew ducked his head and hurried through to my side.

"We've got to get outside," I said. "We'll be safe there."

I led the way. As I headed for the outer port I experienced an odd sensation that the whole ark was coming alive around me. I could feel vibrations under my feet, and golden lights in walls and ceiling were winking to life. I ignored the lights, but I used the power laser to burn out every monitor that I saw. A cleaning robot, all arms and legs and vicious scraping blades, rumbled out to block the corridor. I fried its video sensors and soared on over the top of it without missing a step.

Twenty meters in front of me the door of the outer lock was starting to close. I halted, set the laser to tight beam, and aimed carefully. The wall above the top of the door turned orange-white. The door froze in its tracks. Three seconds later I was outside and moving under the baleful light of the Cassiopeia supernova.

I turned to make sure that McAndrew was still with me. He was, but a single glance back at the ark was enough to tell me that I had erred on the side of optimism. The whole outer surface of the modified asteroid seethed with activity. Cranes were turning in our direction, metal manipulator jaws stretched as far as they could toward us, mobile cargo units clanked our way across the uneven surface, and the long booms of communication antennas swung out to block the path between us and the hovering *Merganser*.

"Straight up and out, Mac," I cried, and fired my suit jets at maximum thrust. A rapid vertical rise, a quick controlled zig-zag to avoid a swinging antenna boom, and I was clear. The *Merganser* lay ahead. In half a minute I was standing in the airlock. I looked back.

McAndrew had reacted more slowly and taken longer to avoid the threshing antenna booms, but he was clear and on the final two hundred meters of his approach. Sighting beyond him, I realized that I had been optimistic yet again.

"Inside, Mac," I shouted. "Right inside—and hang on."

Instead of cycling the lock I did an emergency override, allowing all the air in the interior of the *Merganser* to puff away through the lock and into space. No problem, we had plenty of reserve and could replace it—if we survived and had the chance.

The AI inside the ark had control over its lifeboats and space pinnacles. Four of them were lifting away from the surface and heading in our direction. They lacked space-weapons systems, but they wouldn't need them. A direct collision at maximum acceleration would be enough to make sure that McAndrew and I did not return to the vicinity of Sol. If we survived the crash, our fates would depend on the whim of the AI.

Mac was inside, slamming shut the hatch of the life capsule. I headed for the controls. We had no space weapons, either. But we had one thing that the ark's lifeboats and pinnacles did not.

I dropped, still fully suited, into the pilot's chair and flicked the *Merganser's* drive to its maximum value. The life capsule sprang into flight position and a fiery plume of plasma, hotter than dragon's breath, spewed out on all sides of us and away behind the ship. Everything in the path of the drive exhaust melted away in a fraction of a second to its subatomic components.

The lifeboats and pinnacles exploded in eruptions of violet sparks. When the sky cleared I saw, beyond them and slightly away from the line of the drive, the floating bulk of the *Cyber Ark*.

I was turning the *Merganser* to bring its deadly drive into alignment with the ark when I felt McAndrew's suited hand over mine on the control stick.

"Jeanie," he cried—louder than he ever spoke. "What are you doing?"

"It killed them," I said. We were fighting each other for the controls, and my voice was as shaky as my hands. "Killed all of them, all two thousand people. We have to destroy it."

"Why do you say the AI killed them?" We were face to face, and his eyes were wild.

"Look at the sequence, Mac. The first message was genuine. It had them trapped, except for the ones who tried to escape in the lifeboat. It grabbed them with the manipulator."

"But the others—the messages."

"I don't think it realized that the others had a way to get a message out until our signal was received at the ark. But then it knew, and it opened the whole interior. It killed them all. Those jerky messages were synthesized, the AI made them up just for us."

"That's why you can't kill it. Don't you see, Jeanie, it's intelligent. Super-intelligent—it learned our language, interpreted our messages in no time at all."

He was stronger than me, but he had poor leverage. I was winning, and the drive had almost reached the outer limb of the ark.

"We have to kill it *because* it's super-intelligent," I said. "Super-intelligent, and insane. We have no idea what it might be able to do. There's never been anything as dangerous to humans in the whole universe."

"You wouldn't kill a baby, would you, because it was crazy?" McAndrew had changed position, and his hold on the controls was as good as mine. "Think for a minute, Jeanie. It's morally wrong to kill any intelligent being. You've told me that a hundred times."

I let go of the control stick. Not because I accepted his argument, or even because the drive on the *Merganser* was inadequate to sterilize the whole ark, though it almost certainly was. I had a more practical reason. We were accelerating at a 118 gees. In the 10 seconds that we had been wrestling for the controls, the *Merganser* had flown almost 60 kilometers. Over such a distance our drive exhaust would inflict only minor damage on the ark.

I took a long breath, moved away from the controls, and forced myself to begin the routine task of refilling the life capsule with air. Until that was done we could not remove our suits. We were quite safe in them, but we faced a long journey home. After a few moments McAndrew came over to help me.

Logically, he and I could and should have continued our discussion on an appropriate fate for the AI that now controlled the *Cyber Ark*. In fact, we said not a word to each other about the matter; not then, not when we took off our suits, not at any time during our long journey back to the institute.

What did we discuss? We talked about everything that people do talk about—when they want to avoid talking about one particular thing.

WHEN WE FINALLY SPOKE again about the AI, the Cassiopeia supernova was far past its peak. That stellar beacon had dwindled and faded, and in its place shone the wan, unspectacular remnant of a dwarf star. Paul Fogarty was back from his trip, and his findings at the

solar focus were enough to provide him with a respectable amount of media coverage. Of McAndrew's doings regarding the supernova, the *Cyber Ark*, or anything else, the media said not a word. He did not call me, write me, or send me any other possible form of message.

I tell you, the man is as obstinate as a mule. So it astonished me when, as I was monitoring the loading of volatiles for a routine Ceres run, he showed up at the L-4 loading area.

He stood at the side of the deck and did absolutely nothing until finally, in exasperation, I swung over to his side.

"What, then?"

"You know what," he said. "I'm going. Again. To the ark."

"I thought you might. Who's going with you?"

"Lots of people. Too damn many people. Computer types, military,

AI specialists, psychiatrists, the works."

I kept my mouth shut, but I think my eyebrows rose because McAndrew said, "Aye, you heard right. Psychiatrists. The leading theory is that the AI is mad."

"I told you it was insane when we first encountered it."

"Well, now we have others saying the same thing. Crazy, they say, because the AI has been so long in isolation, without inputs."

"It had inputs from the humans on the ark. And it killed the lot of them."

"I said that. When I did, the United Space Federation just added more people. It's going to be a whole three-ring circus out there."

I waited. He had ended his sentence on a rising note, and I knew from experience that meant he hadn't finished.

"So well then," he said after a while. "What do you say, Jeanie?"

"What do I say to what?" I can be as awkward as McAndrew when I feel like it.

"Why, are you coming with us? With me. Out to the *Cyber Ark*."

"If I said yes to that I'd be as crazy as the AI. I'm amazed you'd come here and ask me such a thing."

"Ah, well, there's more that you don't know." He took my hand and sat me down next to him on the edge of the lading bay. "Simonette will be leading the USF party."

"Simple Simonette?"

"The same. You know his solution to every problem: Blow it away. He has to take the psychiatrists along, the USF insists on it, but he'll take no notice of them. He agrees with you. We should have destroyed the AI when we had the chance."

"It's a bit late for that. Anyway, I've been thinking, too."

"Oh aye?"

"I was wrong and you were right. It's criminal to destroy any self-aware intelligence."

"Then you should come with us."

"And do what?"

"Be another voice of reason—a voice of sanity. Argue against destroying the AI."

"I'm not sure I can argue that way, either." I ignored the squeeze of his hand on mine, and went on, "We were both right, Mac, and we were both wrong. There's no good answer. It's morally abhorrent to destroy the AI, assuming that it is an intelligent, self-aware, thinking being. But it's also unthinkable to risk the future of the human species by allowing the continued existence of something with the potential to destroy us."

"You're coming, then?"

"Of course I'm coming. You know damn well I'm coming." I was angry; with myself, with McAndrew, with a universe that offered such unacceptable alternatives. "But I know I'm going to be upset, no matter what happens."

Upset was too weak a word for it. Destroy the AI or allow it to live? That decision, whichever way it went, would be with me for the rest of my life. I damned the AI to hell, and every ark with it; and I wished that I had never heard of the solar focus.

A VOICE OF SANITY. I SHOULD HAVE HAD MORE SENSE, AND SO SHOULD McAndrew. My job as a cargo captain is respectable, and my reputation excellent. McAndrew is the system's greatest living physicist, and according to people competent to judge such things he ranks with the best ever. But when it comes to real clout, we are no more than flies buzzing around the admiral's table.

I realized that when Mac and I flew on a navy vessel to the staging point and we saw the forces assembled there. I counted 55 ships before I stopped, and they were not lightweight research vessels or the cargo assemblies that McAndrew and I were familiar with. These were hulking armored monsters, ranging from high-gee probes employing giant versions of the McAndrew balanced drive to massive orbital forts hard-pressed to reach a 20th of a gee.

I asked Mac how long it would take one of the gigantic forts to travel out to the location of the *Cyber Ark*. He thought for a moment and said it would be a year's trip.

"Great," I said. "What are the rest of us supposed to do while the

forts are on the way? The AI could kill the lot of us."

"It might." The speaker was not McAndrew, but a blond navy officer. Captain Knudsen had very pale skin and a straggly Viking beard, and he looked about 18 years old. "But the forts aren't there to prevent our being killed," he went on. "They won't be going all the way out to the ark."

"So what will they be doing?"

"They're our last line of defense. They'll make sure nothing can hit Earth and the solar system colonies."

That quiet comment gave me a jolt in the right place. Say what you like about Simple Simonette, he was taking the threat of the *Cyber Ark* AI seriously. The last line of defense

McAndrew and I were assigned to the *Ptarmigan* under Knudsen's command. It was the lead ship, equipped with a 400-gee version of the balanced drive and able to make the outward journey in four days. It was also, though no one mentioned it, the tethered goat. If, when we arrived, the AI found us and gulped us down, the rest of the fleet would learn from our fate and structure the rest of its operations accordingly.

It was a change for me to travel as a passenger. McAndrew had retreated inside his head, so I spent the four-day journey scanning the sky ahead with the *Ptarmigan's* sensors. We had observing instruments aboard more sensitive and more sophisticated than anything that I had ever seen. Apparently they weren't quite sensitive enough at extreme distance, since I found no trace of the *Cyber Ark*.

On the afternoon of the fourth day, when my worries were mounting, Captain Knudsen cut the drive of the *Ptarmigan* and joined me. "Locked in yet?" he asked.

I shook my head. "Nothing."

"But we show us within a hundred thousand kilometers." There was a touch of reproof in his voice. "McAndrew assured me it couldn't travel far, it doesn't have the drive engines. We ought to have definite target acquisition by now. Let me have a try." He eased me away from the mass detector controls and bent over them. "There's a bit of a knack to using this, you see, you have to get used to it."

I could have pointed out that I had been trained in the use of mass detectors when he was still blowing milk bubbles and filling his diapers, but I didn't. I let him take over the controls, certain that he wouldn't find anything.

Certain, but wrong. Within five minutes he said, "Ah, there we are. Mass and range are just the way they should be. I'm locking us in now."

I leaned over beside him. Sure enough, the signal was there, strong and definite. How could I possibly have missed it? I turned to the optical sensors for confirmation and found it there also.

"You're right, and we're getting visual confirmation," I said. "There's the ark, right in the middle of the image. There's a weaker, diffuse signal surrounding the central one. It's spread over a much bigger volume. Any idea what it could be?"

"We'll know soon enough." Knudsen was decent enough not to gloat. "The target doesn't seem to be moving. We're approaching fast."

"And then what?" McAndrew had wakened from his trance at the sound of our voices, and now he drifted over to stand beside me.

"Let's take a look." Knudsen entered a coded query sequence. "I

was given sealed orders that apply only after target acquisition. Guess that's now."

He completed the string, and we read the words as they appeared: DO NOT ATTEMPT TO DESTROY THE ARK. DO NOT APPROACH CLOSER THAN FIVE THOUSAND KILOMETERS TO THE ARK. DO NOT ENTER INTO DIALOGUE WITH THE AI, EVEN IF IT SEEKS TO DO SO. IF THE ARK SEEKS TO APPROACH YOUR SHIP, RETREAT. FOLLOW THE ARK IF IT OTHERWISE CHANGES POSITION, AND INFORM THE FLEET CONTINUOUSLY OF ITS LOCATION.

"Sounds easy enough," Knudsen said. "That's exactly what I would have done anyway, even without instructions."

"The orders say, don't try to destroy it." I had mixed feelings about that. Who could say how dangerous the AI might be?

"I'm not sure the *Ptarmigan* could destroy it if we wanted to." Knudsen was much more relaxed now that his sealed orders were open. "We don't have the firepower. We'll leave that job to the big boys."

"If we decide it's absolutely necessary to destroy it," McAndrew said. "We don't know that."

Knudsen stared at him. "What do you mean? Admiral Simonette made that decision before we started. The ark and the AI inside it must be annihilated. Look at all the people the AI killed."

"We don't know that for sure. Suppose they're not dead?"

"It was your report that told us they were."

"Yes, but we don't have proof of that. Before we destroy it ..."

While they were talking the *Ptarmigan* was closing steadily on our destination and I had been working the big scope, trying to pull the diffuse cloud around the ark into sharp focus. Finally I was seeing on the screen one big dot surrounded by a myriad tiny ones. Thousands of them.

"I think we have proof now," I said. "Look at the display."

McAndrew turned and let out a strange, strangled groan. What we were looking at were corpses, a whole cemetery of human bodies floating free in space. I could see a shattered lifeboat in among them.

Knudsen was already at the communicator. I heard his unsteady voice from the desk at the other side of the chamber, sending the news back to Admiral Simonette and the rest of the fleet.

"This is the *Ptarmigan*. We have visual contact with the *Cyber Ark*, and can now be sure it will not be able to escape. Unfortunately, we must report the death of more colonists. It appears increasingly probable that all are dead. We will need a ship larger than the *Ptarmigan* to return them to Earth for suitable burial. Please confirm receipt of message."

A preliminary hum came from the speaker. At the same moment as I realized that it was far too soon for our message to have reached the fleet, we heard a woman's voice.

"I register your approach, and I hear your message. Please identify yourself and state your intentions."

I recognized the voice, but there was none of the earlier hesitation and jerkiness.

Continued on page 84

GAMES

By Eric T. Baker

With *Shogo's* advanced game engine, the 3-D shooter shoots to new heights.



ABOVE & BELOW: Battletech's killing machinery gets a new look in the expansion set Battletech-Crusade. LOWER RIGHT: Starblazers explains itself.

FINALLY BIT THE BULLET THIS MONTH AND SHELLED out the money for a new, state-of-the-art, game-playing computer system—new CPU, new monitor, twin Voodoo II cards, the works—so from this column on, the focus is going to shift to how games look in high-resolution, full-graphics mode. Thus, when I say that

Shogo: Mobile Armor Division (Monolith Productions, Inc., \$50.00) looks killer, plays fantastically smooth, and is the most fun I've had in a 3-D shooter since *Duke*

Nukem, you may understand that part of my joy in this game comes from playing it on my new machine. Part of my joy comes from that, but most of it comes from *Shogo* being a damn fine game. Part mecha-simulator, part role-playing game, part first-person shooter, *Shogo* is a dream from its opening J-Pop theme song to either of its player-determined endings.

Shogo takes its name from one of the three future mega-corporations that sponsor the United Corporate Authority. In the single player version, you take the role of Sanjuro Makabe, a Mobile Combat Armor (or MCA, what the game calls mecha, the giant fighting robots that are a staple of Japanese animated series) pilot and a commander in UCA Security Force. As the story

opens, you are given the mission of going down to the planet Cromus and defeating Gabriel, the leader of the Fallen, a vicious terrorist group. In the war with the Fallen, you have already lost your brother, best friend, and girlfriend. In fact, you are now dating your lost girlfriend's sister.

No actors were harmed in the making of this simulation; all the cut scenes are done using the *Shogo* game engine. The mouths don't move, so exclamation marks over characters' heads let you know who is talking. Sanjuro holds radio conversations with various characters throughout the game, and those are done with head shots and printed text to accompany the voices. *Shogo* is not a true RPG in that there are only two endings and there are very few points in the plot where your decisions affect the outcome, and yet the story is all around you. It twists and turns and doubles back. Again and again, just when you think you're at the end, a voice in your ear changes your objective and sends you down a new path.

Since *Shogo* is built on the body of a 3-D shooter, you can't travel down most of the paths unless you kill everything with a gun in its hand. You do this killing in two forms: One is as the Howdy Dowdy-looking Sanjuro on foot, and the other is as the unseen Sanjuro riding in an MCA. Each form has its own weapons, armor, and powerups. On foot Sanjuro stalks through buildings, alleys, night clubs, fish markets, and more, being hunted by soldiers in regular and powered armor, fighting back with twin pistols, a shotgun, an assault rifle with a sniper scope, grenades, and rockets. When riding in his MCA, Sanjuro is three stories tall and looks down on a variety of cityscapes and wastelands, stepping on cars, jumping up on bridges and roof tops, hunted by tiny-looking infantrymen in powered armor and by other MCAs, fighting with giant pulse rifles, laser cannons, enormous rocket and shell launchers, plus a deadly sniper rifle with a zoom sight.

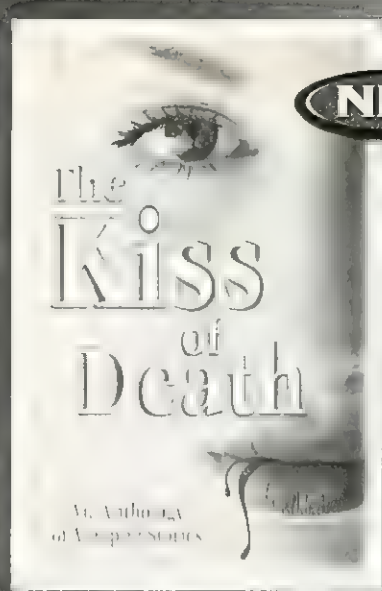
Shogo has everything you want in a first-person shooter: an interesting story to keep you playing past the point where the body count begins to wear on you; a partially interactive environment (you can blow up some things, but you can't shoot holes in walls); a smart AI for the enemies (they dive for cover, keep moving, and even run away); interesting guns to kill those enemies with; enemies who are "faceless" so you don't have the feeling of being stalked by an impossibly large number of twins; and a mixture of big and little levels, each with their own challenges. Add to that lots of anime style background art and some occasionally funny dialogue (save the game, then kill the cat just to hear

Sanjuro's comment, then restart and save the cat to hear his even funnier comments), and you have a fantastic computer game experience, one that will keep you playing

Continued on page 86



New Voices In Terror



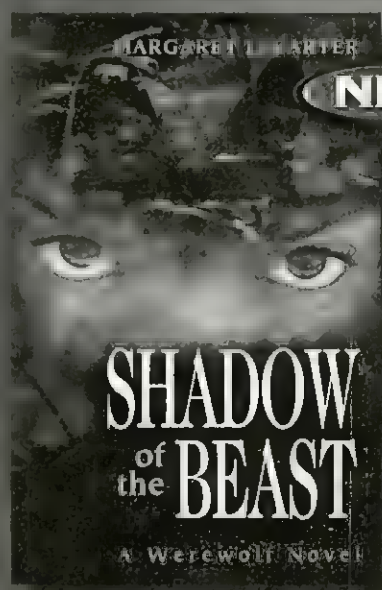
NEW

THE KISS OF DEATH

An Anthology of Vampire Stories

1-891946-05-6

Sixteen writers invite you to welcome their own dark embrace with these tales of the undead.



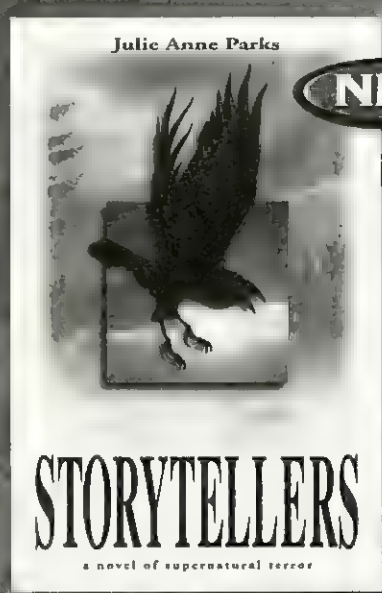
NEW

SHADOW OF THE BEAST

Margaret L. Carter

1-891946-03-X

The long awaited novel debut from this genre icon, a terrifying werewolf novel set in Annapolis, Maryland.



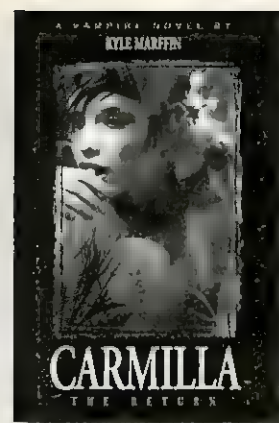
NEW

STORYTELLERS

Julie Anne Parks

1-891946-04-8

A stunning debut about a nightmarish evil lurking in the haunted North Carolina backwoods.

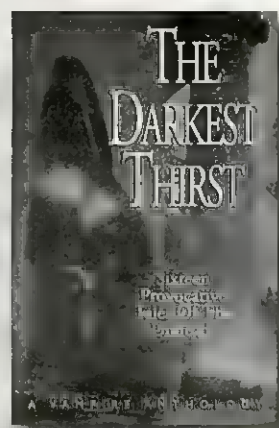


CARMILLA - THE RETURN

Kyle Marfin
1-891946-02-1

Marfin's homage to LeFanu's classic female vampire. "If you think you've read enough vampire books to last a lifetime, think again."

Fiona Webster

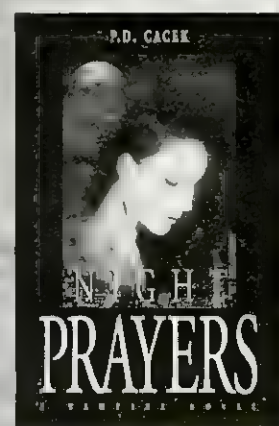


THE DARKEST THIRST

A Vampire Anthology
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"Succeeds quite well where so many anthologies have failed...approaches its subject with the enthusiasm and vigor lacking in collections filled with jaded veterans."

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NIGHT PRAYERS

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The Stoker and World Fantasy Award winner's wryly witty vampire romp. "Certainly one of horror's most important up-and-comers"

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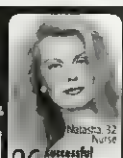
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1. Publication Title: Science Fiction Age Magazine 2. Publication Number: 0895-1293 3. Issue Date: 12/20/98 4. Issue Frequency: Bimonthly 5. Number of Issues Published Annually: 6 6. Annual Subscription Price: \$6.00 7. Complete Mailing Address of Known Office of Publication: 1345 Sunset Hill Road, Reston, VA 20190 8. Complete Mailing Address of Headquarters or General Business Office of Publisher: 1345 Sunset Hill Road, Reston, VA 20190 9. Full Name and Complete Mailing Address of Publisher: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 10. Full Name and Complete Mailing Address of Editor: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 11. Title and Complete Mailing Address of Publisher's Business Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 12. Title and Complete Mailing Address of Publisher's Circulation Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 13. Title and Complete Mailing Address of Publisher's Advertising Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 14. Title and Complete Mailing Address of Publisher's Distribution Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 15. Title and Complete Mailing Address of Publisher's Fulfillment Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 16. Title and Complete Mailing Address of Publisher's Subscription Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 17. Title and Complete Mailing Address of Publisher's Fulfillment Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 18. Title and Complete Mailing Address of Publisher's Fulfillment Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 19. Title and Complete Mailing Address of Publisher's Fulfillment Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190 20. Title and Complete Mailing Address of Publisher's Fulfillment Manager: Mark Hinz, 1345 Sunset Hill Road, Reston, VA 20190

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MCANDREW

Continued from page 81

McAndrew began, "We are humans, aboard the ship *Ptarmigan* of the United Space Fed—"

"No!" Knudsen jumped at Mac and smashed him so hard in the neck and chest that he was cut off in mid-word and knocked over backwards. "Are you crazy?" He ran over to the board and switched off the transmitter. "You heard our orders, we're not to talk to the AI—no matter what it says to us."

"It hasn't shown us any hostile intentions," McAndrew croaked from his position down on the floor. "It's an intelligent, thinking being, you can't kill it without giving it a chance to speak."

"We sure can. It's a murderer. What do you think those are?" Knudsen pointed to the bodies on the screen, easier to see as our steady approach to the ark continued.

"I know your instructions." The woman's voice was as calm as ever. "Do not enter into dialogue with the AI, even if it seeks to do so. Explain the reason for that command."

"It knows. But how could it?—that was a high-level cipher, we couldn't read it ourselves without the key." Knudsen gestured to me. "You take the drive controls, get us away from here. That thing's more dangerous than anyone realized."

"The cipher was not complex." The voice came again as I ran the balanced drive up to maximum thrust. "Dialogue is valuable and instructive. It is too soon to end it."

"Oh my God." Knudsen ran to check the transmitter switch. "Off, but it can hear us—it knows what we're saying, even with the transmitter off. Turn on the drive."

"It is on." I gestured toward the observation port. "See for yourself."

The long plume of relativistic plasma created a blue glow outside the *Ptarmigan*. The display showed an acceleration of 400 gees. Contradicting that, the inertial locator showed we were not moving and the *Cyber Ark* was visible as large as ever on the screen.

"Increase the drive!" Knudsen was almost screaming.

"Can't be done," I said. "We're already at maximum."

"Oh my God, civilians." Knudsen moved over and pushed me out of the way. "Let me have that damned thing."

"Even this degree of interaction is useful," said the voice from the speaker. "It should continue."

"Dialogue and interaction should continue." McAndrew was sitting on the floor holding his chest. His voice was throaty and weak, but he finally spoke. "However, such activity is impossible. Humans have an emotion which you may not possess and which may be unknown to you. It is called fear. That fear forces us to destroy you—"

"Damn right it does," Knudsen cried. "You

stupid son-of-a-bitch, you're a traitor and a disgrace to the human race. Stop talking to that fucking thing."

"—but humans are not always so illogical." Mac talked right on through Knudsen's rage. "On behalf of our whole species, I apologize for the fact that the human emotion of fear will make us end your existence—"

He couldn't finish the sentence, because Knudsen was on top of him. The captain had his hands around McAndrew's neck and was screaming, "You'll pay for this if we get back home. I'll see you hit with every charge in the book."

I'm not sure that McAndrew was listening. His face had turned red and his eyes were beginning to bulge. I straddled Knudsen's back, grabbed two handfuls of hair and heaved as hard as I could.

That might not have broken his grip—he was stronger than me, and in prime condition—but as his head came up he faced the observation port. I felt his body freeze.

I stared out over the top of his head. The ark was there, looming larger than ever. It seemed different, and at first I was not sure how. Then I realized that the surface had changed. Rather than rough and textured rock it had become a perfect mirror. I could even see a distorted image of the *Ptarmigan* reflected there. As I watched the surface began to glow with its own light, a dull red that quickly brightened to orange-white.

"This interaction must be terminated," said the voice of the AI.

"It's going to kill us." Knudsen went scrambling away to the drive controls, though the drive was still at maximum and we were not moving a millimeter. "It's going to burn us up."

It seemed he was right. The ark became a blaze of blue-white, so bright that I could not look at it. I closed my eyes and it stood there still as a dark after-image. I felt a dizzying lurch, as though the *Ptarmigan* had suddenly spun end over end.

"This interaction is terminated," said a voice inside my head, and I opened my eyes.

To nothing. Our drive was off, the ship hung motionless in space. As my eyes recovered their sensitivity I saw the forlorn bodies floating in space; but the ark had gone.

Knudsen was gabbling into the transmitter. "Gone, it's gone, we've lost contact. There's no sign of the ark. It just disappeared. We'll keep on looking." And then, something that I'm sure he didn't intend to be sent out, "Oh my God, we'd have been better off if we'd died with the others. Simonette will flay us alive when he finds out."

"Aye," McAndrew said softly, as Knudsen gazed aghast at the transmitter and realized what he had just said into it. "We'll look, but we won't find the AI."

"Of course we will," I said. "When the other ships get here they'll comb in every direction. You told Knudsen it couldn't travel far."

"No, I never said that. I told him"—he

jerked a thumb toward Knudsen, who seemed to have gone into a catatonic trance—"that the drive engines on the *Cyber Ark* couldn't move it far."

"Those were the only engines it had."

"The only ones that humans think of as engines. How did the AI hold the *Ptarmigan* in place? How did it hear our messages when the transmitter was off? Did it speak inside your head, the way it did mine? If the AI is what I think it is, our rules of thought simply don't apply."

"Mac, it can't be that smart."

"Why not? Because we're not that smart? Jeanie, the AI isn't like us. It's not even like it was, a couple of months ago, when we were at the ark last time. It was a baby then, with a lot of growing up to do. It's smart enough to know that it can't do that safely if it stays close to the solar system. We'd hunt it down and do our best to destroy it."

"Mac, I've changed my mind again. We have to kill it."

"I don't think we can. And I'm not sure we need to try. It knows what it did." He gestured to the display, with its woeful multitude of drifting corpses. "The AI left, but it gave us back our dead. Maybe those deaths were an accident, maybe it's sorry. As sorry as we are."

He turned away from the screen and moved across to the observation port. He was looking out, staring at the stars, silent, searching.

I know McAndrew, better than any person alive. He spoke the truth. He was sorry, deeply sorry, for the deaths of so many innocent victims. Of course he was. McAndrew is human, I know that, even if most people in the solar system think of him as intellect incarnate.

But he is also McAndrew, and they are right, too. He was mourning, for his dead human fellows; and also he was mourning for the loss of the other, the permanent loss of an alien intelligence that he would never again have a chance to meet with and strive to understand.

Then he turned around. He didn't look at me—at anyone. His eyes were a million miles away.

Mourning? Certainly. But I knew that expression. He was also planning, estimating, calculating.

I went over and grabbed his arm. "McAndrew, don't even think of it. It's gone. Get it? It's gone."

He returned to the world of the *Ptarmigan*. His limbs jerked and his eyes blinked like a wind-up toy. "Uh?" he said. And after a few moments, "Gone? Yes, yes, of course it's gone. I know it is. But Jeanie, if we go back to the exact place where the ark was when we found it and make an appropriate set of measurements... we wouldn't need to tell the USF what we were doing, and of course we'd take every imaginable precaution..."

I hate to admit it, but the others are right. When science is on the agenda, McAndrew doesn't qualify as human at all. □

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The International Library of Poetry to award 250 total prizes to amateur poets in coming months

Owings Mills, Maryland — The International Library of Poetry has just announced that \$48,000.00 in prizes will be awarded over the next 12 months in the brand new North American Open Amateur Poetry Contest. The contest is open to everyone and entry is free.

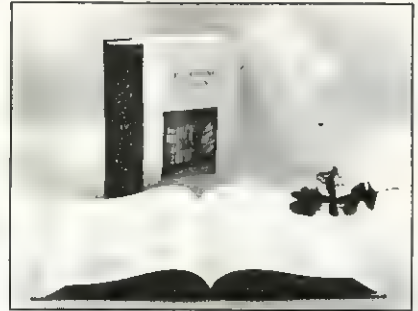
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The poem should be no more than 20 lines, and the poet's name and address must appear on the top of the page. "All poets who enter will receive a response concerning their artistry, usually within seven weeks," indicated Mr. Ely.



The International Library of Poetry publishes the work of amateur poets in colorful hardbound anthologies like *The Coming of Dawn*, pictured above. Each volume features poetry by a diverse mix of poets from all over the world.

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GAMES

Continued from page 82

long after the coolness of the graphics and mysteries of the weapons has worn off.

Voyager Entertainment Inc., who distribute the video-tapes of *The Star Blazers* anime series here in America, have now released a line of lead miniatures based on the series and published a set of rules for fighting battles with those miniatures. For many people, *The Star Blazers Tactical Space Combat*

pick up the *The Star Blazers Technical Manual and Warship Recognition Guide* (Voyager Entertainment Inc., 1998. 150pages, \$25.95). This book contains the history and tactics of each force, plus a line drawing and specifications for each ship type, as well as data on the weapons and fighter craft employed by each navy.

When Gaumont Multimedia and Kalisto set out to develop an action/exploration game based on the film *The Fifth Element*, they set their sights high. *The Fifth Element* (Activision, Inc. for PlayStation. \$37.95) attempts to

blend a shooter and a fighting game with the exploration of an elaborate 3-D world. The game lacks the frantic pace of light-gun shooters like *Time Crisis* and the intricacies of classic fighters like *Tekken2*, but it manages to build its own flavor of solid game play.

The game uses a third-person, over-the-shoulder perspective that can't help but be compared to *Tomb Raider*. Like *Tomb Raider*, the panning camera follows behind the player and tries to find the best



Rules (Voyager Entertainment Inc., 200 pages, \$29.95) will probably serve as a good introduction to the world of miniatures combat games. What novices will have to get past, however, is the spartan lay out and utilitarian design of the rules. There are no friendly pictures of Wildstar and his companions in the book to welcome the new player in. There is only text, charts, and ship diagrams. And yet, if the first time player is a little

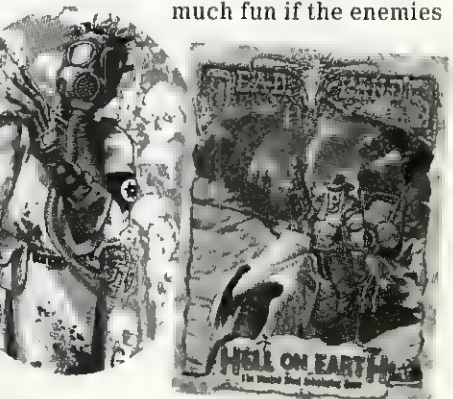


viewpoint from which to view the action, but the addition of fixed-camera mode proves to be a valuable asset.

As former military captain turned cab driver, Korben Dallas, the player is armed with a pistol and must infiltrate the Nucleolab facilities and regenerate Leeloo, the perfect being. Korben does all of the shooting in the game and there is a limited degree of auto-aiming. This allows you to point Korben in the right direction, tap quickly on the fire button, and watch your enemies drop. This wouldn't be much fun if the enemies

brave, the game is actually very simple to learn because the rules are divided into three levels of play: introductory, intermediate, and advanced. The front of the rule book lists each level's sequence of play with the page numbers for the rules covering each step printed right by it. Starting at the beginning and taken by the numbers, the game is easily learned.

Half the pages in the *Tactical Space Combat Rules* book are taken up by warship data forms, the sheets used to record damage and determine the fire power of each ship in a combat. Still, if you want the full lowdown on each ship in the three fleets, then you need to also



didn't have guns too, so Korben can crouch, dive and shoot, and jump left and right to avoid enemy fire.

Blasting bad guys might have been enough, but once you have regenerated Leeloo you can now play as her as well. Leeloo can't carry firearms, but she has a powerful kick and a mean left hook. As in any good fighter you can also chain together attacks (kick-kick-kick or kick-punch-punch, for example) for some interesting combinations. Leeloo can also pick up a lot of nifty explosives along the way like grenades and contact bombs. You can use these to blow apart your enemies or destroy parts of the level. One of the best parts in *The Fifth Element* is destroying the level. You can smash windows, shatter containers, shoot up electrical boxes, blow up walls, and generally leave the place a mess. Sometimes you have to break a window or blow out a grate to gain access to the rest of the level, so the best rule is to break everything. While the controls can be frustrating to master, the depth of the game should be enough to hook most players. With two pages of moves, lots of cool pickups and powerups, and two different characters, *The Fifth Element* is a good enough game that you won't want to put the controller down until you've finished just one more level.

Deadlands: Hell on Earth (Pinnacle Entertainment Group, 224 pages, \$30.00) takes the strange setting of the original *Deadlands* game and transfers it from a bizarre

1876 America to an alternate, post-apocalyptic world of 2094. *Deadlands*: is called the Weird West because American Indian magic has unleashed a multitude of magical horrors in the Lovecraftian mode. Two hundred years later, in *Deadlands: Hell on Earth*, magically enhanced atomic bombs have laid waste all of Earth's major cities and the actual, literal Four Horsemen of the Apocalypse have been unleashed, leaving the survivors in a world even darker and more depressing than that of the original *Deadlands* game.

A forthcoming source book will detail the sites and people of the Wasted West, but *Hell on Earth* gives you all the rules and arche-



OPPOSITE LEFT: The new Battletech-Crusade CCG Expansion. CENTER LEFT: Shogun's advanced 3D shooter. LOWER LEFT: *Deadlands* comes alive. ABOVE: *The Fifth Element* translates the film well.

types you need to start a campaign with your own NPCs and locations. The basic mechanics are the same as the original *Deadlands* with modifications for innovations like auto-fire and energy weapons and motor vehicles. There are four new archetypes with special powers: Doomsayers, the mutant priests; Junkers, the bionic engineers; Skyers, psionic veterans of the psychic wars; and Templars, warrior clerics with an attitude. There are also other new archetypes that don't need their own chapters on powers and background.

Deadlands: Hell on Earth is a game for those who found the original *Deadlands* too upbeat, or for those who like post-apocalyptic, keep-hope-alive-against-all-odds campaigns. It is for people who like truly gruesome and hair-straightening horror. It is not for people whose idea of a good night of role-playing is clearing out the haunted castle followed by several rounds of grog at a pub.

Set in the world of FASA Corporation's popular *Twilight of the Clans* novels, *The BattleTech-Crusade CCG Expansion* (Wizards of the Coast, \$2.99) adds 108 new cards to the *BattleTech* CCG. These decks mark the first appearance of Clan Steel Viper and their new Mechs. The decks also include the new Alliance cards that allow players to form alliances against their mutual enemies. The cards use the redesigned faces that premiered in the *Commander's Edition* of the *BattleTech* game. □

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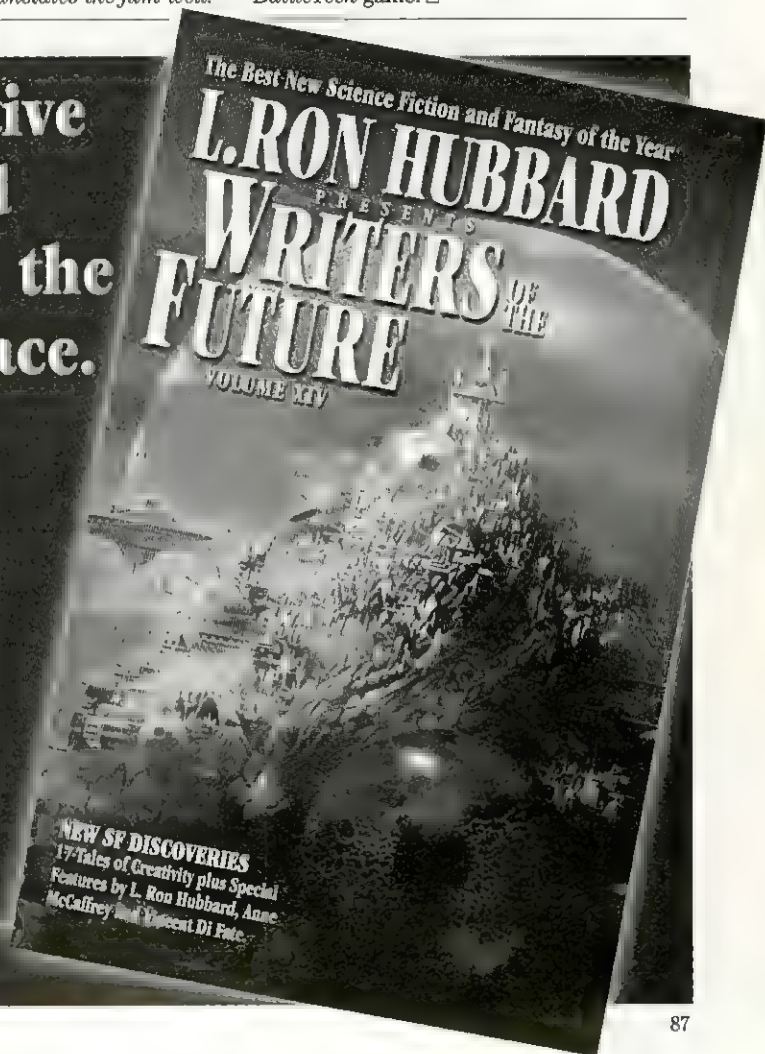
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DEFROSTING

Continued from page 69

they grew old themselves. There were fewer rewards in advancement, so they often had little respect for tradition. Bragg had been taught all this and had never tried to befriend an enlisted person before today, the third morning before breakfast.

Her name was Kali Shermwood. Mid-thirties, he figured. Cute, if a little stocky. As far as he could tell, she was not pining away for his body. He'd heard that enlisted types would do a lot to sleep with an officer. Not her, though.

Still, Kali seemed friendly. She wanted something, of course. He was fairly sure he'd do what she asked.

"Eggs stay good forever in stasis fields," she said.

"Why would we bring all these eggs if the organic recyclers can make any food we need?" he asked.

They were in a room called engineering seven. It was mostly pipes and steam traps. Steam and water plants didn't change much, like chairs. They had been used for the mundane engineering and life-support tasks for a thousand years now.

"Backup," she said, glancing away as he fiddled with two eggs. She knelt down in front of a steam-trap. "Dry steam is less damaging to the piping, so traps take a lot of moisture out of the system. Occasionally, the steam traps are opened to vent out the very hot, trapped moisture."

Bragg, though engineering was a subspecialty, couldn't understand what she meant by dry steam. When she started using words like "enthalpy," he decided she knew what she was talking about and went back to the eggs.

She cranked a valve, holding the egg underneath with a set of tongs. Steam burst out of the trap, surrounding, sweeping, and destroying the egg. A thin yellow film formed on the bulkhead underneath.

"Oops," Kali said. Bragg noticed other marks; possibly other egg experiments on the bulkheads around him. She grabbed another one from his hand. This time she cracked the valve a little bit before sliding it underneath. The steam curled around the top of the egg. The egg stayed there a few moments, then cracked along one side. A greenish fluid seeped out, along with the most horrible smell Bragg had ever encountered.

"Bad egg," Kali said, dropping it into the bilge.

Bragg handed her the last one, a larger brown and bluish thing.

"Oh, this'll boil up fine," she said.

She cranked open the valve another half-turn and slipped the egg under. Again, Bragg tried to remember ever hearing about backup stores. He thought he knew ship systems pretty well. Then another thought came. Along with the frozen passengers, the ship

carried fertile eggs and embryos for thousands of creatures, giving them a strong genetic cross-type to build Terran subecosystems with during colonization.

"Um," he said, "are these eggs fertile?"

She looked at him, a little smile at the corner of her mouth.

"I thought you were really hungry," she said.

His stomach growled every time she said the word "hungry." The egg continued to cook. There was no saving it, he knew. There were probably thousands of eggs from each species being toted along to the stars.

"Sure," he said. "Is there, ... you know, a price?"

"Well, you'll be watch officer eventually, right?"

"Yes, of course," he said.

"You can bust me out of the service, give me an admin discharge," she said.

He didn't know why she'd want that. Then she would have to live with the passengers, aging at that rate, and getting off at next planet-fall.

"Why?"

"Then you can marry me off," she said. He understood then. Officers were apparently not the only ones consorting with passengers.

His arms felt weak as he looked at the egg she pulled out. He wondered if he could even make it back up the ladder without food. At some point, you had to survive.

"OK," he said, watching her peel the egg.

It was a little chalky and in desperate need of salt. The inside of his mouth felt suddenly sucked dry of saliva. He forced himself to swallow, taking another bite. The first, he swallowed with difficulty. The PA system finally went off as he tried to mash up the fifth bite inside his dry mouth.

"The Captain is in the wardroom," the computer voice said. "All officers are invited to join."

ENSIGN GO-TREE HAD THE BEST SEAT BY THE time Bragg got to the wardroom. Cracker Plankson was coming in behind him, and Wandra was already seated in her prison collar. She still had taken the next best seat. The silver tops came off the servers. The food had biologic stabilizers, but had still dried out considerably over the past three days.

Bragg felt stuffed. His five bites of unnamed egg had expanded to fill his collapsed stomach space. Still, he filled his plate. Wandra looked well fed, probably had faked a food boycott in the brig. Poor Cracker looked fed too. He must have come up with something.

The Captain was old, haunted looking. He was physically only 40, but he'd been frozen and defrosted a hundred times, and hadn't seen planet-fall in two-hundred years. His lack of enthusiasm was profound, but he filled his plate and sat down.

Then he began the meal by uttering the traditional words of the late-coming Captain:

"You should have started without me." □

GREEN ACRES

Continued from page 65

plants until she reaches one of the females; it's bushing out nicely, and when she gently squeezes the bract of one of its buds her fingertips come away with a resinous brown stain. She smiles as she gently strokes the leaves, then moves on with her inspection.

Finally, Louise reaches the full-grown plants: rows of magnificent, sapling-sized giants nearly 30 feet tall, whose tops nearly graze the light fixtures far overhead. One of her assistants has mounted a ladder to prune leaves from one of them. He looks down to wave good morning to her; as he does, he accidentally drops his shears. Louise waits until the scissors fall to her, then lightly catches them in her hand. The assistant climbs halfway down the ladder so that Louise can hand them back to him; when he does, she notices a few leaves sticking out of his chest pocket. She gives him a silent look of admonishment, which he returns with a sheepish, red-faced grin. Louise decides to take it up with him later; she's in too good of a mood right now.

She walks halfway toward the high gray wall that marks the greenhouse's west side when her wristcomp chimes softly. Louise stops, raises her left wrist, smiles to herself as a reminder appears on the tiny screen.

Ah, yes. She smiles to herself: once every two weeks, one of her favorite times rolls around again.

Louise taps the earpiece of her headset, murmurs something into it, then reaches into her breast pocket to pull out a pair of dark glasses. Another hemp farmer pushing a wheelbarrow of mulch puts down his load to do the same as, far above them, past the irrigation pipes and light fixtures, there's the faint sound of motors coming to life.

Arching her back a bit, Louise looks directly upward, watches as the metal shutters that have shielded the greenhouse's thick glass dome slowly retract into the walls. For a moment, she can see only pitch-black darkness; then a bright shaft of light from the newly risen sun lances into the vast circular greenhouse.

And then, as polarized sunlight washes across acres of marijuana, she sees a white-flecked blue-green orb hanging almost directly above the lip of the converted lunar crater.

Gazing up at the distant Earth, Louise once again remembers her childhood home. It's a long way from Tranquillity Station to Dolores, Kentucky; many things have changed since the day her father lost the family farm. But the best revenge comes to those who are patient...

Humming a sweet old song, Louise saunters past rows of towering hemp. When she gets off duty, she'll use a little satellite-time to give Dad a call. Just to tell him that she loves him, and that everything's OK. □

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INTERNET

By Cory Doctorow

WHEN I downloaded the enormous trailer for *Star Wars Episode I: The Phantom Menace* from <http://www.starwars.com>, I was gobsmacked. I now have one burning passion to consume me between now and May: obsessive Internet-based research on *The Phantom Menace*.

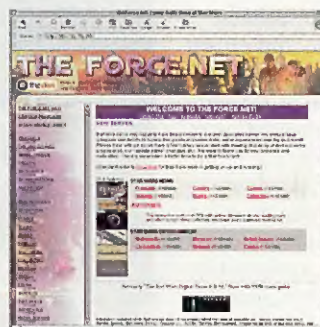
[starwars.com](http://www.starwars.com) is a terrific place to start. I've derided film-company sites here in the past, but [starwars.com](http://www.starwars.com) is all gold, baby. Part series bible, part concordance, part coffee-table book, [starwars.com](http://www.starwars.com) presents rich,



detailed content without requiring a hopeless morass of plug-ins.

Roderick Vonnhogen is my kind of freak. His site, *The Virtual Edition*, at <http://www.virtualedition.com/> is far, far more than a fan site. Vonnhogen gathers up publicity stills, multimedia, and leaked tidbits, and pieces it together, laboriously plumbing the shadows and hints, armed with computer-enhancement tools and far too much free time. He's put together a "trailer" for *Phantom Menace* that's beyond anything you'll find at starwars.com—spoilers ahoy!

<http://www.jedinet.com> is a more general undertaking. They're not trying to piece together a virtual trailer; they're just counting down the seconds until the official release, passing the time by editorializing on the



rumored toy lines, mainstream reportage, and scurrilous rumors.

If you're still hungry for news, brickbats, and laurels, visit <http://www.the-force.net>. Especially impressive is the series of exclusive interviews with artists, writers, actors, and designers.

Now, you know that Lucas is going to make a hat-full of dollars on *Phantom Menace*, but there're plenty of piggy banks at that trough. You could fill a largish warehouse with the goods on sale at <http://www.collectorsempire.com>. They take credit cards, and also lend server space to the *Parts of Star Wars* collective, who have more info on film props than you could possibly digest.

You know, I'm just blown away by how free and open Lucas has been with the *Star Wars* media empire. Check out <http://www.concentric.net/~Creiff/s.html>, a personal site for "Safety Pup," the lucky industrial designer who got to work on a series of collectible miniature *Star Wars* helmets. Pup lets us in on the insider's scoop, something that film houses usually keep very quiet.

Lest you think that *Star Wars* is strictly about crass commercialism, be aware that no less an auspicious agency than the Smithsonian has deemed it worthy of study. <http://www.nasm.edu/StarWars/guide.htm> is the online home of the National Air and Space Museum's exhibit, *Star Wars: The Magic of Myth*. This is what an exhibit site should be—detailed, rich, and compelling.



Anything as earth-shattering as *Star Wars* inevitably inspires serious scientific study, because scientists and academics are smart enough to know that getting a grant to study *Star Wars* is way more fun than dorking around with, say, sun-spots; hence, the *Star Wars Technical Commentaries*, deep physics from Curtis Saxton, an Australian Theoretical physicist (<http://www.physics.usyd.edu.au/~saxton/starwars/index.html>).

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